SLAVIC ASPECT AND ITS IMPLICATIONS

by

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ABSTRACT

The goal of this thesis is to explore a new theory of verbal aspect. The theory is motivated primarily by a consideration of morphological and syntactico-semantic data from Slavic, but as a module of Universal Grammar it can be shown to be of much more general applicability. Thus Slavic aspect is contrasted with what can be found in a variety of other languages. The proposed system of representation is derivational in character: Final aspectual structures are built up by a small number of operations from lexical representations. The theory posits only two aspectual primitives (the point and the box, yielding perfectivity and imperfectivity in Slavic in a direct fashion).

Chapter One begins with an overview of much of the relevant data from the Slavic language Polish. Morphological and syntactico-semantic reflexes of aspect are identified and correlated. This leads directly to a formulation of the theory. The workings of the latter are demonstrated with respect to Polish verbs of motion. Its applicability to other languages (including English) is also discussed; one of the key factors contributing to language differences is different means of lexical underspecification of aspectual structures.

Chapter Two examines further data from Slavic. It is shown how double-aspect phenomena, inherent perfectivity, and habituals can be construed as providing support for a theory of the type envisaged here. The proposed theory (its primitives, operations, and conditions) is summarised in this chapter.

Chapter Three is an exploration of the connection between aspect and prepositional notions. Core prepositions (or their equivalents) are taken to be interaction-denoting categories, a view that is contrasted with locationist hypotheses. Some aspectual consequences of this view are developed.

Finally, chapter Four continues the study of extra-Slavic and prima facie extra-aspectual implications of the theory here proposed. The
dative alternation in English is examined, as are the English locative alternation, Georgian medial verbs, and restrictions on English 're-' prefixation. Light is shed on these phenomena, which at the same time provide empirical support for such theoretical devices as aspectual zerohood, box-layering, and lexical underspecification.

Supervisor: Kenneth Hale

Title: Ferrari P. Ward Professor of Modern Languages

and Linguistics
TO THE READER

One of the principal objects of theoretical research in any department of knowledge is to find the point of view from which the subject appears in its greatest simplicity.

J.W.G.

One should be wary, I think, of works that begin by announcing an examination of the complex phenomenon X in language Y. To invoke complexity is to say basically that one does not understand a certain phenomenon (to a certain level of satisfaction), while simultaneously implicating its properties as a kind of rationalisation. Part of the reason (matters of partial fulfillment aside) for my presenting the research that follows to the reader is that I consider many aspeetual matters to be rather simple when viewed from a certain perspective. That perspective is the proposed theory.

The reader should be aware of the following conventions. In the body of the text, non-English linguistic data appear in double quotes; glosses are given in single quotes or in brackets. For emphasis, certain words (e.g. technical terms) are capitalised. This device is also used to highlight certain morphemes. Polish material is presented in Polish orthography. Georgian data are given in transliteration; the apostrophe signals glottalisation. ' + ', ' − ', and some ' − ' boundaries are from the cited sources, while any added morpheme boundaries are indicated with hyphens. Following the convention of my sources, capital letters are not used in Georgian transliterations (the present-day Georgian alphabet does not use capitals). References typically appear in the A(y:p) format (where A = author, y = year of publication/copyright, p = page number). Abbreviations such as NOM. or ACC. for Cases should be transparent. Foreign language quotations have been translated into English by me; however, in order to avoid an avoidable extra layer of translation-induced approximation, I have left French glosses of Georgian material in French. The major subdivisions of chapters are referred to as sections. Modulo quotations, Australian orthography is used throughout.

In a few places I assume familiarity with the results of research into phonology and syntax. References are provided, but since these discussions are fairly short the reader who is unfamiliar with the technicalities should be able to proceed to subsequent paragraphs without too much difficulty. Sections 4.1, 4.2, and 1.2 contain
(inter alia) a discussion of lists of lexical items – this material can be skimmed on a first reading.

I take this opportunity to express my gratitude to the members of my thesis committee, K. Hale, D. Pesetsky and K. Wexler, for their interest, their time, their suggestions and their encouragement. More generally, I must mention the stimulating research environment created at M.I.T. by faculty and visitors as well as students. My personal thanks to those students who entered the department in 1986, but also to many others.

I acknowledge financial support (crucial in this day and age) from the Department of Linguistics and Philosophy as well as from the Fulbright programme. For support of numerous kinds (particularly the intangible kind so crucial in any day and age) I say to my family: Bóg zapłać.

Finally, I dedicate whatever is of value in the pages that follow ad maiorem Dei gloriam.

P.F.K.
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- 4.1 The dative alternation
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**Concluding thoughts**
INTRODUCTION

It has been said of aspect that there are almost as many definitions of the notion as there are linguists working on the topic. Accordingly I will spare the reader yet another definition. Nor will I begin with a typology or classificatory schema, although after a while a typology of sorts will emerge. Rather, my main goal is to propose and defend a theory of aspect. Ultimately then the answer to the question 'What is aspect?' will be that which the theory is about. My notation will be somewhat novel, but as might be expected, along the way we will encounter many a traditional insight and see a version of it encoded or represented in the theory formulated here.

In the end, any approach of this type is to be evaluated largely on the basis of its fruitfulness as a tool for further research, and of the amount of understanding it brings to those who study linguistic phenomena. However preliminary justification for embarking on the course that ensues is not hard to find. Consider the physicist studying sub-atomic particles. He could begin with definitions of 'elementary particle', 'quark', and 'lepton' (possibly together with a classificatory scheme). Alternatively he could set out to explore
structured theories from which some notion of 'quark' or 'lepton' naturally emerges (or into which they must be put as initial conditions, and hence as promissory notes to be dealt with in subsequent research). The former approach has its place - it can be found in textbooks and compendia dealing with fields that are thought to be relatively well understood. The latter approach is more suited to areas under active investigation; it is thus the path taken here.

A lot of the data I will use to build up and justify my theory of aspect come from Slavic. Hence the first half of the thesis title. The Slavic focus is natural given the well-known fact that this language family has a well-developed morphological system encoding aspectual notions. It has been said (Chomsky, class lectures 1988-89) that what one finds overtly in one language one will find at least covertly in others. The reasoning behind this dictum is that if language A has feature x, it has it for a reason. Therefore one might expect language B to have x for the same reason, even if x is not immediately visible in B. (This approach is natural in a framework that prizes economy.) Of course, the above dictum is not so much a law as a guideline for research, there being differences among languages. However, I will take it quite seriously, and I will look for earmarks of an aspectual theory based on overt Slavic morphology in a number of other language families. Data from Slavic will enable us to get this process underway.

A research programme of the nature sketched above crucially relies on the claim that one can learn something about one language by
studying another. This makes sense to the extent that one posits an overarching theory, encompassing the individual grammars of what are called individual languages. The work reported here thus partakes of a well established research tradition into Universal Grammar (UG). It will explore what I will call the aspect module of UG. The second half of the thesis title will serve to remind the reader that this module is expected to have extra-Slavic implications.

At this point I should introduce some terminology which I will utilise throughout. First and foremost, one has the distinction between PERFECTIVITY and IMPERFECTIVITY. The term 'perfective' must not be confused with the term 'perfect' (which characterises, for instance, English verb forms with auxiliary 'have'). The notion of (im)perfectivity pervades Slavic, and I will introduce the relevant morphology and semantics gradually in the course of chapter 1. For something of an initial idea of the distinction, I call the reader's attention to the Romance language family. Here, restricted to the past tense, one finds the distinction between imperfection and perfectivity expressed, for instance, by the French "imparfait" and "passé composé", respectively:

imperfective: Je mangeais une pomme. (I was eating an apple.)

perfective: J'ai mangé une pomme. (I ate an apple.)

Parallel examples from Latin, Italian, Spanish, etc. can easily be constructed.
I presume more extensive familiarity with the state-activity-accomplishment-achievement terminology introduced by Vendler (1967) (related in turn to work by Ryle (1949) and Kenny (1963)). I will use these terms primarily as an expository device. The literature summarising and evaluating the various tests for activityhood, accomplishmenthood, etc. is now quite large. (See Dowty (1979), Mourelatos (1981), Holisky (1981a), Tenny (1987), Brinton (1988) for summaries of varying lengths.) I presume familiarity with this literature; what follows is intended merely to refresh the reader's memory.

States ('know the answer', 'love a friend') share a reluctance to appear in the progressive: '*I am knowing the answer', '*I am loving a friend'. Activities ('You were running', 'You were pulling the cart') and accomplishments ('He was drawing a circle', 'He was running a mile') are easily progressivisable. Achievements ('She died', 'She noticed me') can be viewed as momentaneous accomplishments. To differentiate activities from accomplishments one notes the following pattern of co-occurrence restrictions with durational modifiers:

activity: You ran for 30 seconds.
* You ran in 30 seconds.

You pulled the cart for 30 seconds.
* You pulled the cart in 30 seconds.
accomplishment: * He drew a circle for 30 seconds.

He drew a circle in 30 seconds.

* He ran a mile for 30 seconds.

He ran a mile in 30 seconds.

Accomplishments can be finished, while activities cannot be. Both may be stopped. Activities are homogeneneous in the sense that if one is now running then one has run. This contrasts with the situation for accomplishments where if one is drawing a circle one typically need not (yet) have drawn a circle.

A version of these notions is useful for discussing the theory I am about to explore.
CHAPTER 1

A THEORY OF ASPECT

The topic of the aspectual properties of the Slavic verb has been under active investigation now for close to a century. In a way this is hardly surprising given the central role that aspect plays in characterising what it is that makes Slavic Slavic. Somewhat more recently, a number of linguists have attempted to construct general theories of aspect, so that a considerable body of work now exists dealing with English as well as many other languages. The motivation here seems to be the fact that aspectual distinctions are not just one more quirky facet of language that a complete theory will eventually have to account for, but that such distinctions often play a central role in constraining and mediating between other (modular) subtheories of the language faculty. This has led to the fruitful use of aspectual notions in the classification of predicates with respect to the kinds of logical inferences they license, or with respect to properties of argument structure such as verbal diathesis.

The present study starts from both points of view. I will be
concerned both with the details of Slavic aspect as well as with the role played by aspect in linguistic theory. It is natural to expect that each of these two strands will shed light on the other.

A good place to begin is with an overview of some of the core properties of aspect in Polish, this being the Slavic language I know most intimately. The opportunity is thereby provided for establishing a theoretical vocabulary, for illustrations of what types of behaviour I call aspectual, as well as for basic scene setting. Once sufficient background has been established, I will introduce the theory, the workings of which will be illustrated with data from a number of languages.

1.1 THE ASPECTUAL MORPHEMES OF POLISH

Central to any study of the Polish verb is the distinction between forms that are known as PERFECTIVE and those known as IMPERFECTIVE ("czasowniki dokonane" and "niedokonane" respectively in the native Polish tradition). One reason for this centrality is the observation that every Polish verb (finite, infinitival, imperative, or whatever) is either perfective or imperfective. Strictly speaking, with one proviso the latter disjunction is in fact an 'exclusive or' - so that for our purposes what we have here is a partition (an exhaustive classification into mutually exclusive classes) of all items in Polish

1. See Section 2.1 on 'double aspect verbs'.
of the syntactic category 'Verb'. This partition is independent of all other classificatory dimensions, such as Tense or Person or Mood. For the moment I am primarily interested in exemplifying the morphological and syntactic reflexes of our partition (i.e. of the perfective-imperfective dichotomy).

The most basic morphological pattern is revealed in the following table. I refer to it as basic solely because of its numerical preponderance.

<table>
<thead>
<tr>
<th>IMPERFECTIVE</th>
<th>PERFECTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) kończyć (to finish)</td>
<td>skończyć (to finish)</td>
</tr>
<tr>
<td></td>
<td>zakończyć (to conclude)</td>
</tr>
<tr>
<td></td>
<td>dokończyć (to finish off)</td>
</tr>
<tr>
<td></td>
<td>wykończyć (to put the finishing touches on)</td>
</tr>
<tr>
<td></td>
<td>ukończyć (to finish: school, a task, n years)</td>
</tr>
<tr>
<td></td>
<td>pokończyć (to finish: distributive)</td>
</tr>
<tr>
<td>(2) czytać (to read)</td>
<td>przeczytać (to read through)</td>
</tr>
<tr>
<td></td>
<td>odczytać (to read out aloud; to decipher)</td>
</tr>
<tr>
<td></td>
<td>doczytać (to read up to a certain point)</td>
</tr>
<tr>
<td></td>
<td>wyczytać (to find (something) via reading)</td>
</tr>
<tr>
<td></td>
<td>wczytać (READ( ))</td>
</tr>
<tr>
<td></td>
<td>poczytać (to read for a while)</td>
</tr>
<tr>
<td></td>
<td>naczytać się (to read one's fill)</td>
</tr>
<tr>
<td></td>
<td>zaczytać się (to get absorbed in reading)</td>
</tr>
<tr>
<td></td>
<td>rozczytać się (to engage in reading with a passion)</td>
</tr>
</tbody>
</table>
Dozens of Polish verbs can easily be added to the table above, but (1)-(3) suffice to establish the fundamental pattern.

The first point to notice is that all the forms exemplified are infinitives — the infinitival suffix for the vast bulk of Polish verbs surfacing as "-ć". Thus "kończyć" (to finish), "czytać" (to read), and "jeść" (to eat) are imperfective infinitives while all the other verbs are infinitives with perfective aspect. (One syntactic constraint on the occurrence of imperfective versus perfective infinitives will be discussed in Section 1.3.) I have selected the infinitival form for tabulation essentially as a matter of convenience (partly to facilitate glossing, and partly to follow the Polish lexicographic tradition). However it should immediately be noted that many other forms could have been chosen (e.g. all the above verbs could have been exemplified in the first person plural of the past tense).

Let us work through (1) in some detail. To the solitary SIMPLE IMPERFECTIVE "kończyć" (to finish) there correspond in some sense six

<table>
<thead>
<tr>
<th>Polish Verb</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>jeddar</td>
<td>(to eat)</td>
</tr>
<tr>
<td>dojeddar</td>
<td>(to eat up to a certain point), (to be mean to)</td>
</tr>
<tr>
<td>wyjeddar</td>
<td>(to eat completely)</td>
</tr>
<tr>
<td>podjeddar</td>
<td>(to eat a bit; to eat from underneath)</td>
</tr>
<tr>
<td>pojeddar</td>
<td>(to eat for a while)</td>
</tr>
<tr>
<td>objeddar</td>
<td>(to eat all the way around)</td>
</tr>
<tr>
<td>objed6 si9</td>
<td>(to overeat)</td>
</tr>
<tr>
<td>najed6 si9</td>
<td>(to eat one's fill)</td>
</tr>
<tr>
<td>przejed6 si9</td>
<td>(to eat too much of; to become unappetising)</td>
</tr>
</tbody>
</table>

(3) jeść (to eat)  zjeść (to eat up), (to harm)

(1) (1)-(3) suffice to establish the fundamental pattern.
perfective formations, each constituted of "kończyć" preceded by a prefix. The various prefixal forms all indicate some kind of finishing, but contrast among themselves with respect to the exact shade of meaning assumed. These shades of meaning are sometimes quite clear and readily perceptible, but can also be fairly subtle in other instances. Thus the most neutral way of forming the perfective of "kończyć" is given by "Skonczyć"², which I have glossed simply as 'to finish'. The form glossed as 'to conclude' is rather less neutral. Compare in this regard "Skonczyć rozmowę" (to finish a/the conversation) with "Zakończyć rozmowę". With the former one brings the conversation to a close; with the latter (what I call 'concluding') one gives the conversation an ending. Both forms contrast with the notion of abrupt termination indicated by a verb like 'stop'. To appear as the direct object of "Zakończyć", something must have the property of admitting a distinct ending. Letters, books, speeches and discussions all qualify. On the other hand, infinitival complements are quite odd: One says "Skonczyć jeść" (to finish eating; literally: to finish to eat) rather than "Zakończyć jeść", the activity of eating having no characteristic ending (as opposed to mere stopping). Similarly one says "lato się Skończyło" (summer is over; literally: summer reflexive finished) and "zapasy się Skończyły" (the supplies have run out) as in both cases we are dealing

---

2. I will on occasion adhere to a convention of capitalising the prefixal portion of a word, for the sake of perspicuity. Note that the prefix in "Skonczyć" is actually "Z", with regressive voice assimilation.
with the exhaustion of an essentially homogeneous process.
Conversely, it is more natural to say "Zakończył życie" (he died; literally: he finished life) than "Skończył życie", since the process of dying is the distinct ending of a life. I should add here that the prefix "ZA" coincides with the Polish preposition "za", one major meaning of which is 'behind'.

The form "DOKończyć", which could be glossed as 'to finish off', 'to finish up', or 'to complete', employs the prefix/preposition "DO" meaning 'to' and conveys the idea of adding what is missing to some previously started activity. The notion of Goal is thus implicit, as can be seen in "DOKończyć list" meaning to add whatever is necessary (by way of writing or reading) to produce a complete letter. The perfective form "WYkodczyć" is rather specialised in that it admits only certain kinds of direct objects. Typically it co-occurs with something signifying a work of art or the product of some creative endeavour - hence the rather complicated gloss 'to put the finishing touches on'. There is also a colloquial usage with animate direct objects (e.g. "Wykończyłem go" = 'I finished him off') signifying acting on till the point of exhaustion, physical or mortal. "Ukończyć" is even more highly restrictive with respect to allowable direct objects, admitting little more than set tasks, educational institutions/courses, and numbers of years. The latter yields sentences like "Ukończyła 15 lat", literally: 'she finished 15 years', and is a perfective alternative for the stative "ma 15 lat" (she is 15 years old). Interestingly, all the direct objects allowed by "Ukończyć" are also admitted by the more neutral "Skończyć" with no
meaning difference as far as I can tell. Finally, "POkończyć" requires that the event of finishing be composed of several distinct but homologous subevents, in what can be called a DISTRIBUTIVE way. Standardly, the direct object will be in the plural - as in "POkończył listy", which is translatable into English as 'he finished the letters one by one'. Occasionally the distribution will be slightly more complex, encompassing the subject as well; for example: "dzieci POkończyły szkoły", meaning 'each child obtained an education' (literally: children finished schools).

The examples in (2) further illustrate many of the same points, and so can be dealt with rather more quickly. As in (1) we have one simple imperfective infinitive ('czytać') together with a whole series of perfectives. Among the latter the most neutral seems to be "PRZECzytać", glossed as 'to read through'. From just (1) and (2) we can see that Polish has no single all-purpose all-encompassing neutral perfectivising prefix 3. Note that the related preposition "przez" means 'through' or 'across'. "ODczytać", constructed with the prefix/preposition "OD" = 'from', requires some kind of Source as direct object - either a written text for reading aloud, or a code to decipher. Employing the prefix/preposition "DO" = 'to' (cf. "DOkończyć" in (1)) gives "DOczytać", which we might translate as 'to complete reading up to a certain point'. The default value of this

3. Thus "Sczytać" does exist, but only in the very technical vocabulary of professional proofreaders where it is a trivalent verb meaning to check one text (a copy, say) against another (the original). Incidentally, **"PRZEkkończyć" does not exist.
point is the end, but either this or some other point can be explicitly specified by means of a prepositional phrase: e.g. "DOczytałem (książkę) do 5-go rozdziału" = 'I read (the book) up to chapter 5'. "WYczytać", not unlike "WYkończyć" in (1), is quite specialised - its direct object is typically some kind of information. There is also a much rarer use of this infinitive exemplified by "WYczytać wszystkie książki z biblioteki" (to read all the books in the library), the sense of which parallels the exhaustion reading of "WYkończyć". The prefix "PO" occurred in its distributive use in (1); "POczytać" in (2) however illustrates another of its meanings, that of spending some amount of time doing something. The infinitive "Wczytać", based on the prefix/preposition "W" = 'into, in'

is a term coined in computer science for the process of mechanically inputing (reading in) data into a machine. This is what the computerese gloss 'READ( )' is to suggest.

Finally, the last three forms in (2) commonly occur only with the reflexive particle "się", and indicate how the reading process affects the one who reads. "NAczytać się" for instance can be glossed as 'to have one's fill of reading'; in a neutral context it would imply becoming tired of reading. The preposition "NA" means 'onto, on' (see the preceding footnote for the distinction) - often giving the corresponding prefix an accumulative sense. For the glosses of "ROZczytać się" and "ZAczytać się" I refer the reader to (2).

4. When occurring with a Locative Case complement, "w" means 'in'; with Accusative Case it means 'into'.
"ROZczytać" with a non-reflexive direct object is rare and stylistically marked, but it means what one would expect it to on the basis of (2) (viz. to engage someone in the activity of reading with a passion). Non-reflexive "ZAczytać" on the other hand is strictly colloquial, signaling the destruction (of a book or newspaper, say) via the process of reading.

Moving on to (3), one finds the same fundamental pattern, with a few twists. The most neutral perfective corresponding to "jeść" (to eat) is "Zjeść", which is formed with the same prefix that gives us "Skończyć". The goal-directed end-phase prefix "DO", the exhaustive prefix "WY", and the "PO" which means 'to spend a while doing something' all make a re-appearance. Likewise "NAjesć się" exactly parallels "NAczytać się". Interestingly, "Zjeść" (though not the simple imperfective "jeść") has acquired a secondary meaning glossable as 'to harm'. English presents us with a somewhat similar phenomenon in sentences like 'Don't worry - he won't eat you' or 'See, she didn't eat you after all'. An analogous semantic shift can be seen with "DOjeść", one sense of which is 'to be mean to'. Some prefixed forms in (3) allow more than one (perfective) meaning without such drastic shifts in semantics. Thus "PODjeść" can (especially with the benefactive reflexive dative "sobie") mean 'to eat a little; to appease one's hunger', but it can also correspond to 'to eat from

5. As we will see shortly, both these sentences (in translation) would mandate "Zjeść" rather than "jeść" purely on the grounds of tense and aspect.
underneath; to ruin by eating from the under side'. "OBjeść" can be glossed as 'to eat all the way around something', but with an animate direct object the sense is 'to eat someone out of house and home'. The reflexive "OBjeść się" however means 'to eat too much; to overeat'.

The above discussion is far from exhaustive, but some key observations have emerged simply from correlating semantics with morphology. Firstly we have the important close match in form between perfectivising prefixes and prepositions. This is tabulated fully below:

<table>
<thead>
<tr>
<th>prefix</th>
<th>preposition</th>
<th>gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>DO-</td>
<td>do</td>
<td>'to'</td>
</tr>
<tr>
<td>NA-</td>
<td>na</td>
<td>'onto, on'</td>
</tr>
<tr>
<td>NAD-</td>
<td>nad, nade</td>
<td>'over, above'</td>
</tr>
<tr>
<td>O-</td>
<td>o</td>
<td>'about, around'</td>
</tr>
<tr>
<td>OB-</td>
<td>o</td>
<td></td>
</tr>
<tr>
<td>OD</td>
<td>od, ode</td>
<td>'from'</td>
</tr>
<tr>
<td>PO-</td>
<td>pod, pode</td>
<td>'all over' (of, say, an entire surface)</td>
</tr>
<tr>
<td>POD-</td>
<td>przez, przeze</td>
<td>'through, across'</td>
</tr>
<tr>
<td>PRZE-</td>
<td>przed, przede</td>
<td>'in front of'</td>
</tr>
<tr>
<td>PRZY-</td>
<td>przy</td>
<td>'by, near'</td>
</tr>
<tr>
<td>ROZ-</td>
<td>no direct correspondent</td>
<td></td>
</tr>
<tr>
<td>U-</td>
<td>u</td>
<td>&quot;chez&quot;</td>
</tr>
<tr>
<td>W-</td>
<td>w, we</td>
<td>'into, in'</td>
</tr>
<tr>
<td>WY-</td>
<td>no direct correspondent (but cf. z, ze)</td>
<td>'out of')</td>
</tr>
<tr>
<td>WZ-</td>
<td>no direct correspondent</td>
<td></td>
</tr>
<tr>
<td>Z-</td>
<td>z, ze</td>
<td>{'with', 'out from, down from'}</td>
</tr>
<tr>
<td>ZA-</td>
<td>za</td>
<td>'behind'</td>
</tr>
</tbody>
</table>

A further point to note is that whenever a preposition has variants of
the "z, ze" / "od, ode" / etc. type, then the homologous prefix does too - the reason for not including them in the table is to reduce clutter. Basically one can see then that the correspondence in form between prepositions and perfectivising prefixes is fairly tight.  

Correlations in meaning are much more tricky, although we have seen some. Occasionally the meaning of a perfective form is fully predictable from that of root plus prefix ("D0kończyć" and "D0czytać" are good examples). In other instances a range of potential meanings seems to be provided, from which one or more are selected as actual (cf. "PODjeść"). Special selectional restrictions (such as those pertaining to "WYkończyć" or "Ukończyć") will require some degree of brute force memorisation. To summarise, the table above shows some underlying correlations, but one which leaves a fair amount of room for idiosyncrasies in individual lexical items.

At this point I will dispose of a fundamental potential objection to my whole approach. One may be tempted to claim that what we see in present day Polish are only the remnants of a long-lost historical phenomenon. By implication, some traces of a previously regular process remain, but the accompanying 'mass of idiosyncrasy' points to a lack of PRODUCTIVE perfectivisation (in the sense of (1)-(3)) in modern Polish. True, there are instances of new prefixed perfectives entering the language (especially in technical domains of discourse) 

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6. Needless to say, there exist other prepositions (both simple and compound) in Polish in addition to those appearing in (4) - these do not enter into prefix-preposition doublets.
with entirely predictable semantics. One example of this is "Wczytać" in (2). Such formations, however, would have to be considered as arising strictly 'by analogy' with existing forms. 7

It is precisely at this point that the weakness of the objection in the preceding paragraph is revealed. The nature of science can be taken to fundamentally involve the EXPLICATION of analogy. If so, appealing to analogy to solve a problem has no explanatory force at all - it merely raises the question and refuses to proceed on to an answer. This is one of our key tasks. Clearly then a more detailed examination of borrowings and coinages is in order.

Let us spend a few moments examining what happens when words from other languages enter Polish - which I hasten to add is informal shorthand for something like the phenomenon of a speaker of Polish assimilating to one part of the grammar/lexicon dealing with verbal morphology an item not initially acquired with such an affiliation. There is a remarkable consistency in the way this happens. Overwhelmingly the borrowed form ends up as a simple imperfective, and it is perfectivised via the selection of 'the most appropriate' prefix. Consider the following examples:

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7. These objections are not simply a straw man. In fact they are one element in a rather long controversy in Slavic over whether perfectivising prefixes always add non-aspectual information to verbal roots. For a negative answer on this score, and for a discussion of the relevant references see Piernikarski (1969,1970).
All the verb roots in (5)-(7) are non-Slavic; most are transparent borrowings from Latin, English or French. Yet from the point of view of aspectual morphology they all behave in paradigmatic fashion. Thus "inicjować", "startować", "plombować", "sortować", etc. are all imperfective, while "ZAinicjować", "ZAstartować", "ZAplombować", "ROZsortować", etc. are perfective. Further, in each case the choice of prefix is well motivated. Thus in the forms listed under (5), "ZA" focuses on the point of inception - compare "ZApoczątkować" = 'to begin' and "ZAmieszkować" = 'to begin residing', based on the Slavic "początek" = 'beginning' and "mieszkanie" = 'dwelling-place'. In (6), "ZA" stresses the attainment of a totality, as it does in such purely Slavic infinitives as "ZAsunąć (firany)" = 'to close (the curtains)' and "ZAkryć" = 'to cover'. On the duality of inception-termination see sections 1.7 and 1.8. "ROZ" on the other hand is a prefix indicating centrifugal motion, hence its appropriateness with verbs of dispersion like those in (7). A centrifugal tendency can be viewed as
loss of control/order/identity at some centre resulting in multidirectional chaos. When viewed in this light, "ROZentuzjazmować" and "ROZhisteryzować się" fall neatly into place. "ROZczytać się" in (2) can also be thought of as belonging to this group, as can other verbs with purely Slavic roots, such as "ROZwalić" = 'to smash apart', or "ROZEźmalać się" = 'to burst out laughing'. Significantly, borrowed verbs like those in (5)-(7) tend to have rather few prefix choices (per verb) available - some have only one. What I have informally shown so far is that in many clear cases the choice of perfectivising prefix is a function of the meaning of the base verb, be it of native/Slavic or of borrowed/non-Slavic provenance. To the extent that speakers of Polish can compute this function, we can invoke the notion of synchronic productivity.

A rather different way of arriving at the same conclusion is to analyse the following data:

(8) PRZEtransportować to transport
    PRZEtransponować to transpose (music)
    Zdeformować to deform
    Zdemontować to disassemble
    WYekscerpować to excerpt
    WYeliminować to eliminate
    Skoncentrować to concentrate
    Skoordynować to co-ordinate

Each of the verbs in (8) was borrowed together with its Latin prefix.
As is to be expected, the non-capitalised portions on the right hand side in (8) (i.e. "transportować", etc.) are imperfective infinitives. For the purpose of perfectivisation a native prefix from
table (4) was appended. Note that in each instance the Polish prefix corresponds to the Latin one (trans-, de-, ex-/e-, cum/con-). Thus compare the four pairs in (8) with "PRZE tłumaczyć" = 'to translate', "Zniszczyć" = 'to destroy', "WYrzucić" = 'to throw out', and "Zgromadzić" = 'to gather', respectively, where the Polish prefix performs exactly the same role as in (8) (but without the Latin counterpart). I regard it as implausible that the forms in (8) arose uniformly via direct translation (of a prefix) from Latin. This is partly because speakers of Polish who do not possess knowledge of Latin morphology are quite capable of perfectivising verbs like "transportować", "deformować" etc., and partly because the direct translation hypothesis is refuted by forms like "ZAinaugurować" and "ZAinwestować" from (5), where "*Winaugurować" and "*Winwestować" are quite impossible. Once again then the evidence points to prefixes chosen as a function of verb-root meaning.

Finally, let us consider a very interesting coinage that appeared in the Polish newspaper Gazeta Wyborcza of September 1-3, 1989 (page 6). The relevant verb was printed as ,,pogdybać" (with Polish inverted commas) and might be glossed as 'to what-if'. The word is based on one of the Polish words for 'if' (viz. "gdyby") and means to spend some time engaging in hypothetical speculation. What is relevant for  

6. Note that table (4) implies the existence of apparent polysemy in the case of "Z".

9. The relevant factor here seems to be the tendency of "W" to require a quite literal ("w"-like) interpretation; "inaugurować" and "inwestować" do not have enough of this meaning to license "W".
our purposes is that this verb (which in our notation would be rendered "POgdybać") is built on precisely the same prefix "PO" that occurs in (2) and (3). Yet the verb is patently an on-the-spot coinage. I take it then that the position of one who postulates zero synchronic productivity with respect to Polish perfectivisation is quite dubious.

One very natural question that arises in connection with (1)-(3) is the following: Given that the various perfective forms of a single verb exhibit sometimes subtle and sometimes not-so-subtle differences in shades of meaning, is it possible to create corresponding imperfectives with those very same shades of meaning? The answer to this is by and large affirmative, but it necessitates the introduction of some new suffixational machinery. The simplest situation arises when we consider (2) where most of the perfective infinitives listed possess clear suffixed imperfective counterparts. In particular we find the following:

ODczytYwać
DODczytYwać
WYczytYwać
WczytYwać
ZAczytYwać się
ROZczytYwać się

For the purposes of this paragraph I capitalise the relevant suffixational material in addition to the prefix. "POczytYwać" = 'to regard as' has drifted out of this family, but in all the other cases shades of meaning are preserved exactly.

Directly corresponding to (3) one finds:
In addition there exist an extra sense of "PODjadać" (to eat underhandedly, e.g. by first stealing), and a form "POjadać" which means 'to eat now and then, little by little'. The infinitive "Zajadać" (to eat with a good appetite) exists even though "Zajeść" does not. Here no overt imperfectivising suffix surfaces, but one sees that the verbal stem is systematically transformed from "-jeść-" to "-jada-", a transformation that can be viewed as a change of conjugational class plus phonological alternation. In a way this is not unlike what happens when we examine the imperfective versions of the perfectives in (1). Here we find:

ZAkariczad or ZAkończad
DOkariczad or DOkończad
WYkariczad or WYkończad

In my speech it is the first member of each pair that occurs, which member displays the same conjugational class membership and the same vocalic phonology that we saw in forms like "Zjadać".


11. Note in particular the "a" before the infinitival marker "ć"; this "a" occurs with a word-final glide in the second person singular imperative.
corresponding to (3).

That the suffixational process illustrated immediately above is essentially independent of prefixation can be deduced from a handful of imperfective (non-prefixed) verbs which nonetheless admit suffixation. Thus we find:

<table>
<thead>
<tr>
<th>Polish Verb</th>
<th>Suffixation</th>
</tr>
</thead>
<tbody>
<tr>
<td>czytać (to read)</td>
<td>czytYać</td>
</tr>
<tr>
<td>pisać (to write)</td>
<td>pisaYać</td>
</tr>
<tr>
<td>mieć (to have)</td>
<td>mieWać</td>
</tr>
<tr>
<td>być (to be)</td>
<td>byWać</td>
</tr>
<tr>
<td>widzieć (to see)</td>
<td>widYać</td>
</tr>
<tr>
<td>grać (to play)</td>
<td>grYać</td>
</tr>
<tr>
<td>siedzieć (to sit)</td>
<td>siedYać</td>
</tr>
<tr>
<td>jeść (to eat)</td>
<td>jadać</td>
</tr>
<tr>
<td>nosić (to carry, wear)</td>
<td>naszać</td>
</tr>
<tr>
<td>mówić (to speak)</td>
<td>mawiać</td>
</tr>
<tr>
<td>chodzić (to walk)</td>
<td>chadać</td>
</tr>
<tr>
<td>kroić (to cut)</td>
<td>krajać</td>
</tr>
<tr>
<td>pić (to drink)</td>
<td>pijać</td>
</tr>
<tr>
<td>bić (to beat)</td>
<td>bijać</td>
</tr>
</tbody>
</table>

(The last two forms on the right are near obsolete.) Semantically all these suffixed forms are strictly habitual. Curiously they all denote very common everyday activities.

To recapitulate, so far we have seen simple imperfective verbs perfectivised by the addition of an appropriate prefix. Furthermore, quite often (though not invariably) the output of such perfectivisation can undergo suffixation, yielding a re-imperfectivised verb. The technical term for such a form is a SECONDARY (or derived) IMPERFECTIVE. For the sake of brevity I have glossed over most of the morphological and phonological details of the concomitant suffixation.
One might next ask whether these secondary imperfectives can subsequently be re-perfectivised. It turns out that this too can be encountered, but only through the use of two of our aspectual prefixes: most productively with the distributive sense of "P0", and to some extent with the accumulative sense of "NA". Therefore, corresponding to "WYkończyć" in (1), with secondary imperfective "WYkańczać", one finds the distributive perfective "PO-WY-kańczać". Likewise, corresponding to "Zjeść" in (3) we obtain "PO-Z-jadać". In semantic terms, "POWYkańczać domy" means 'to act on the houses one by one, putting the finishing touches on each'.

1.2 ON MULTI-PREFIXATION
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A very fundamental observation can be made at this stage. Thus if we temporarily put aside distributive "PO" and accumulative "NA":

(10) at most one aspectual prefix can appear on a Polish verb.

This can clearly be seen for the vast bulk of the lexicon of Polish: If we had no such restriction we would expect the various prefixes to freely combine (at least whenever sense could be made of or imposed on such a combination). Yet nothing like this is to be found. Overwhelmingly, perfectives bear a single prefix. There are literally

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12. See section 2.2 for why I say 'at most one' rather than 'exactly one'.
thousands of such Polish perfectives. Given the various prefixes in (4), one might therefore expect massive potential for multi-prefixation. This expectation is definitely not fulfilled.

Careful investigation does however reveal some putative counterexamples. Needless to say, we must discard verbs with syllables phonologically but not morphologically identical to an aspectual prefix. Thus "polonizować" (to make Polish) does yield "Spolonizować", but the latter must not be construed as "Z-PO-lonizować" given that the verb root comes from the root of the noun "Polonia" (Poland (in Latin)); further, "*lonizować" is inconceivable. In like manner, "ZAuważyć" (*ZA-U-ważyć) (to notice) is related to "uwaga" (attention), not to "ważyć" (to weigh); and "Zrozumieć" (*Z-ROZ-umieć) (understand) corresponds to "rozum" (mind) rather than to "umieć" (to know how to). Sometimes a verb stems from a noun which for synchronic or diachronic reasons already has a bona fide prefix. We have already run across one such example: The verb "ZApoczątkować" must not be analysed as "*ZA-PO-czątkować" (to begin) given its derivation from the noun "początek" (beginning). A parallel situation arises with respect to de-adjectival verbs. Thus "Urozmaicić" (*U-ROZ-maicić) = 'to variegate' comes from "rozmaity" = 'varied', "Upowszechnić" (*U-PO-wszechnić) = 'to universalise' from "powszechny" = 'universal', "Uzależnić" (*U-ZA-leźnić) = 'to cause to become dependent' from "zależny" = 'dependent', etc., and so forth.

13. The suffix "-ek/-k", often (though not always and not here) diminutive, confirms the nominal status in this case,
After sifting out such irrelevancies, one is left with a small residue of verbs that might appear to be genuine counterexamples to (10). Here however in (virtually) every instance, it can be shown that speakers of Polish must independently memorise additional idiosyncratic information. In such (very occasional) cases it is not too surprising that morphological twists or reanalyses accompany semantic or phonological ones:

POD-U-paść This verb occurs in (basically) only two contexts, both tightly circumscribed: 'to deteriorate economically' and 'to suffer ill-health'.

U-S-kładć 'to put together'
This verb is restricted to financial contexts; cf. "składka" = 'collection of dues or donations'.

WY-PO-środkować 'to estimate the desired mean' - a rather specialised term.

OB-U-mrzeć 'to become lifeless'
"*mrzeć" (to die) no longer exists - it has been replaced by "umrzeć".

WY-S-Powiadać 'to confess'
Restricted to one specific religious use. Correspondingly, its argument structure is different to that of "Powiadać", and it can (and usually does) occur as a reflexive.

WY-S-PRZE-dać 'to clear via selling'
"dać" means 'to give'; "sprzedać" (to sell) has been reanalysed more than once in the course of Polish history. 14

Z-WY-myślać 'to rudely criticise'
Derived from "wymyślać" = 'to invent, to complain' rather than directly from "myśl"

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14. Hence alternative pronunciations like "wysprzedaż", "wyprzedaż" are listed in dictionaries; only the former occurs in my speech.
PO-ROZ-mawiać 'to have a chat'
Closer to the noun "rozmowa" = 'chat' than to "mówić" = 'speak'.

ZA-PO-dziać 'to mislay'
Based on "podziać" = 'to (mis)lay', not on "dziać się" = 'to happen'.

ROZ-PO-znać 'to distinguish'
One can distinguish "POznać" = 'to get to know' (perfective of "znać" = 'to know') from "poznać" = 'to recognise'; only the latter is relevant to "ROZpoznać".

ZA-PO-znać 'to acquaint'
This verb standardly occurs with an argument structure ("ZApoznać kogo z kimá/czymá" = 'to acquaint with') which "znać" does not allow.

PO-WS-ciągać 'to temper'

PO-WS-trzymać 'to hold back'

ZA-WE(Z)-zwać A rather literary term meaning 'to summon'.

PO-WS-stać 'to arise'. As in the previous example the bracketed fricative disappears, suggesting phonological reanalysis. The prefix "WS" is moreover no longer productive; it has numerous phonological shapes though it combines with rather few verbs overall.

Occasionally one comes across whole families of putatively multiprefixed perfectives. In such cases a reanalysis of a prefix (causing it to lose its aspektual status) is likely. I give a list of all the examples of which I know of 'families' of this kind.

ODpocząć (to rest)
WYPocząć (to take a good rest)
Spocząć (to put oneself at ease)
ROZpocząć (to begin)

These four verbs are built on "począć" = 'to begin, to conceive' and
not on "*czyć".

ODpowiedzieć  (to answer)
Opowiedzieć  (to describe)
ZApowiedzieć (to announce)
WYPowiedzieć (to pronounce)
PODPowiedzieć (to prompt)
ROZpowiedzieć (to tell far and wide)
PRZEPowiedzieć (to foretell)

This family is clearly based on "powiedzieć" = 'to tell' rather than on "wiedzieć" = 'to know'.

Wynajęć       (to rent, hire)
PODnajęć      (to sublet)
Uwzięć się    (to take on an attitude of hostility)
ZAWzięć się   (to take on an attitude of hostility)

Here one should note that the diachronic base verb "jąć, imać" = 'to hold' is nowadays totally obsolete. One encounters it only in the writings of authors who deliberately want to create an archaic effect. Yet the four verbs listed are far from archaic. Synchronically the intuition of reanalysis (into, say, "najęć" = 'to hire') is quite strong. Correspondingly, the semantic shift (from 'hold' to 'hire') is also considerable.

Uzbierać       (to collect)
WOzbierać      (to gather out of)

One might be tempted to base this pair on "brać" = 'to take'; the semantics however indicates a tighter connection with nouns such as "zbiór" = 'collection' and "zbiórka" = 'collection (of money); small meeting'.
Each of these pairs has very little to do with "stać" = 'to stand, be standing'. Instead it seems that "dostać" = 'to get' and "przestać" = 'to stop' are implicated. Note incidentally that "stać" does yield "PRZEstać" = 'to spend a period of time standing' (which is very different from "przestać" = 'to stop'.)

Perception verbs like "jrżeć", "glądać" no longer exist. In the pair above I suspect that the nouns "pogląd" = 'view' and "wzgląd" = 'concern' are implicated. Finally,

This family has a historical relation to the noun "wola" = '(free) will'. Synchronically this is dubious, since the form "ZEzwolić" would then be an extremely curious instance of the aspectual prefix "Z" occurring twice in a row. Rather I suspect a close tie to nouns like "zwolennik" = 'follower, adherent'.

Given the relative scarcity of counterexamples (relative, that is, to the thousands of well-behaved verbs), and their idiosyncratic nature when found, I conclude that (10) is well supported. Of course,
only ASPECTUAL prefixes count for (10); others like "nie" (negation) as in "ZA-nie-mówić" = 'to be struck bumbfounded' (cf. "mówić" = 'to speak') are quite irrelevant. 15

1.3 SYNTAX AND SEMANTICS OF ASPECT

So far I have dwelt largely on the morphology-semantics correlation in what might be called the 'basic' Polish aspectual paradigm. (Some other, much more restricted paradigms will be examined later.) In theory, by inspecting the prefixes and suffixes of any single verb one should be able to predict its aspect. In practice, given the intricacies of the suffixation process, not to mention the occasional reanalysed prefix, one needs to rely on further tests for perfectivity and imperfectivity. It is natural then to examine alternations, related forms, and the verb's place in the whole paradigm (which we have in fact frequently done). Independent tests, however, arise out of syntactico-semantic interactions of Polish aspect, and it is to these correlations that I now turn. This will have the added benefit of illustrating what it actually means to be perfective or imperfective in Polish.

15. Further examples: "Z-nie-sławić" (to defame), "ZA-nie-czyścić" (to pollute), "ZA-nie-móc" (to feel faint), "Z-nie-kształcić" (to deform).
The Polish tense system is built on a basic opposition between PAST and NONPAST. The former can be identified by inspection of the morphological make-up of a finite verb - a morpheme surfacing as "i" or "t" always appears. The nonpast is signaled by the absence of this morpheme and it is on the nonpast that Test 1 focuses. Put in its simplest form, the test says that

(11) Imperfective nonpast = present
    Perfective nonpast = future.

A couple examples with "(Z)jeść" and "(S)kończyć" are shown below:

(12) a. Jem śniadanie.
    I am eating breakfast.

    b. Zjem śniadanie.
    I will eat breakfast.

(13) a. Już kończę ten list.
    I'm already finishing this letter.

    b. Jutro skończę ten list.
    I'll finish this letter tomorrow.

The intuitive contrast between (12a) and (12b), and between (13a) and (13b) is quite sharp - indeed this is the first test I personally use to check intuitions of (im)perfectivity. All the same, some care is needed. As is well known, a present can often be interpreted as a

16. The following list of aspectual tests is not meant to be exhaustive. Correspondingly I will not treat the bahaviour of perfectives and imperfectives in all syntactic contexts; see Koschmieder (1934), Netteberg (1953) and Smiech (1971) among others for extensive relevant discussion of these issues.
past (in the phenomenon known as the historic present), and this is
certainly possible in Polish (where it is generally called "praesens
historicum"). Polish also possesses a "praesens propheticum" which
can be seen as a future use of the present. As in English, such forms
usually take on a 'scheduling' interpretation. It is this sort of
interpretation that must be 'factored out' when using (11) as an
aspectual diagnostic. Corroboration with the tests to follow
generally indicates how well this factorisation has been effected.

TEST 2

Apart from the future given by the perfective nonpast and the
(scheduling) "praesens propheticum", a speaker of Polish can also
construct an imperfective future. The latter is periphrastic in form,
and contains the future of the verb "być" = 'to be'. (Note that "być"
is the only Polish verb with its own paradigm in the future.¹⁷) One
then faces the following constraint:

(14) Only imperfective verbs can occur in the
imperfective future.

The use of (14) as a test of aspect can readily be illustrated:¹⁸

¹⁷. Thus "będę" = 'I will be'; the meaning is imperfective. That
"będę" is not actually a crypto-perfective (and so shifted to the
future) is corroborated by the existence of "bedąc" = 'being' - see
Test 4 for the logic.

¹⁸. The reader may notice the "l"/"ł" morpheme cropping up here - its
diachronic explanation is its former use as a participial marker.
(15) a. Będę jedzie śniadanie,
    I will eat (will be eating) breakfast.

    b. *Będę zjadł śniadanie.

(16) a. Kiedy będziesz kończyć ten list?
    When will you finish (be finishing) that letter?

    b. *Kiedy będziesz skończył ten list?

TEST 3

Having dealt with the nonpast and the periphrastic future, only the past tense remains. Here one finds the same type of aspectual contrast as occurs in the Romance languages (a contrast pretty much restricted to the past tense there). Thus in (spoken) French the so-called "imparfait" and "passé composé" 'tenses' indicate a difference of aspect.

(17) a. Quand vous ENTRIEZ, il est sorti.
    b. Quand vous ÊTES ENTRÉ, il est sorti.

(18) a. Quand vous FINISSIEZ la lettre,
    il a mangé une pomme.

    b. Quand vous AVEZ FINI la lettre,
    il a mangé une pomme.

Similar pairs can be constructed in Italian, Latin and many other languages. Polish and English versions follow:

(19) a. Gdy wchodzisz, on wyszedł.
    When you were walking in, he walked out.

    b. Gdy wszedłeś, on wyszedł.
    When you walked in, he walked out.

------

19. (19) and (20) contain glosses.
(20) a. Gdy kończyłeś list, on zjadł jabłko.
    When you were finishing the letter,
    he ate an apple.

    b. Gdy Skończyłeś list, on zjadł jabłko.
    When you finished the letter, he ate an apple.

In a nutshell, the (a) sentences mandate a containment reading (where for example the entering temporally contains the exiting, and the finishing the eating), while the (b) sentences entail either immediate sequencing or simultaneity, as can be deduced from the glosses. In this way, the possibility of proper containment can be invoked as a test of imperfectivity.

TEST 4

Our next diagnostic is essentially the non-finite version of Test 3. Its usefulness derives from its morphological flavour. The Polish language possesses two productive series of participles (some authors call them gerunds; "imiesłowy" is the native term) functioning as adverbial adjuncts. One series ends in "-ąc", and the other in "-szy". This gives us the following test:

(21) Only imperfectives allow "-ąc" participles;
    Only perfectives allow "-szy" forms.

More concretely, one finds:

(22) kończąc  (while finishing)
    * Skończąc

    * kończywszy
    Skończywszy  (having finished)

(23) jedząc  (while eating)
    * Zjedząc
* jadższy
Zjedższy (having eaten)

Parallel to (20) are sentences like the following:

Jedząc śniadanie, skończyła list.
(You finished the letter while eating breakfast.)

Zjadższy śniadanie, skończyła list.
(Having eaten breakfast you finished the letter.)

It should be noted, though, that the "-szy" participle occurs primarily in the written language, which implies that it is not always fully natural for more colloquial verbs. Bearing this factor in mind, one finds substantial agreement with our other tests.

TEST 5

I began this study by examining perfective and imperfective infinitives. The following test allows us to tease these apart.

(24) Infinitival complements of verbs like "przestać" (to stop) or "zacząć" (to begin) must be imperfective.

I illustrate with verbs denoting familiar activities:

(25) a. zacząć jeść.
(to begin to eat)

* zacząć Zjeść

b. przestała kończyć
(she stopped finishing)

* przestała Skończyć

The beauty of this diagnostic is that the relevant judgments are very
sharp - the starred sentences are simply inconceivable.

TEST 6

For transitive verbs we can construct a kind of converse to Test 5; namely:

(26) A passive participle appearing with the auxiliary "zostać" must be perfective.

Applying (26) to our standard examples gives:

(27) Wszystko zostało Zjedzone.
     All was eaten.
     * Wszystko zostało jedzone.

(28) List ten nigdy nie został Skończony.
     (That letter was never finished.)
     * List ten nigdy nie został kończony.

Thus because of (26), the by-now familiar perfectivising prefix "Z" cannot be omitted from the forms in (27)-(28).

TEST 7

Our final aspectual diagnostic involves durational modifiers. There are complications here which I will not deal with now.²⁰ I will merely outline the basic situation. The Polish equivalent of the English durational 'for two hours' is the noun phrase 'two hours' in Accusative Case. Aspectually it is basically restricted to

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²⁰ A few aspectual prefixes occur most felicitously WITH durational objects: e.g. "P0stał tam 2 godziny" (he stood there for two hours).
imperfectives. One can say "jadłem 2 godziny" (I ate (for) two hours), whereas "Zjadłem 2 godziny" has only the nonsensical reading in which hours are physically consumed. Of course one can instead say 'I ate breakfast in two hours' = "Zjadłem śniadanie w czasie 2 godzin" (literally: I ate breakfast in the time of two hours).

Having thus set the stage, the time is now ripe for the construction of a theoretical account of the foregoing phenomena. An adequate theory will have to address such issues as the relation between perfectivising prefixes and prepositions, the limit on the number of prefixes per verb, and the nature of the perfective-imperfective dichotomy. Ultimately too, the diagnostics (including the syntactic ones) that we have used to identify (im)perfectivity also need to be explained, as few (if any) of Tests 1 to 7 look like plausible linguistic primitives. Sentential reflexes of aspect of this type will lead us naturally to a consideration of languages besides Polish.

One avenue I will not pursue is the extension of a theory of inflection like that of Pollock (1989), Chomsky (1989) to include an $X^0$ category Aspect together with its projections (an Aspect Phrase). The preceding discussion abundantly showed how a Polish finite verb can encompass anywhere from zero to three aspectual morphemes. Both suffixes and prefixes occur, and the properties of prefixation look nothing like the properties of suffixation. Consequently if one were to posit one syntactic head labelled Aspect, one would in addition require a complex system of spell-out and readjustment rules (or
equivalent devices) to capture the various co-occurrence restrictions. Conceivably one could rescue this approach by allowing several aspectual head nodes in a clause, but then issues of interaction would need to be worked out. It is not at all obvious that the resulting account would not be a notational variant of that which I will propose. Furthermore one might then need to add even more machinery to explain the various morphological and inter-clausal behaviour patterns discussed under the rubric of Tests 1 - 7.

Nor will I begin by assuming the existence of a primitive binary feature [+ Perfective]. Certainly doing so would capture the Polish perfective-imperfective dichotomy (particularly if all (syntactically related) features were binary). However, this approach also seems to mandate (the equivalent of) a battery of rules converting the value of the aspectual feature from minus to plus, and from plus to minus. Constraining such a system is a non-obvious feat. Questions such as the following come to mind: What would block an indefinite number of switches from plus to minus to plus, and so forth? If (habitual) imperfectives can arise from simple imperfectives (cf. (9)), how would one bar analogous perfectivised perfectives with an indefinite number of aspectual prefixes? In sum, it would not be the feature which does the real work but the machinery governing its specification. (Once again the question of notational variance would arise.)

Instead I will propose a very minimal system of aspectual representation, and show how it interacts with syntax and morphology.
To do this I will begin by examining a small aspectual paradigm in Polish that deviates from the massive basic one discussed heretofore. My line of attack will be to get inside the system by seeing how it 'breaks down'. Apparently pathological cases may well cast some light on the inner workings of more garden variety phenomena.

1.4 VERBS OF MOTION

The seemingly exceptional paradigm to be examined contains sixteen members, commonly referred to as 'verbs of motion' since they all involve movement in one way or another. Their peculiar characteristic property is that they possess not one but two basically simple imperfective stems that enter into the system of aspectual morphology. The following list is essentially exhaustive - bracketed forms are obsolescent:

(29) DETERMINATE INDETERMINATE

<table>
<thead>
<tr>
<th>Polish</th>
<th>Polish</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>bieć</td>
<td>biegać</td>
<td>(to run)</td>
</tr>
<tr>
<td>ciągnąć</td>
<td>ciągać</td>
<td>(to pull)</td>
</tr>
<tr>
<td>gnać</td>
<td>ganiać</td>
<td>(to chase)</td>
</tr>
<tr>
<td>iść</td>
<td>chodzić</td>
<td>(to walk)</td>
</tr>
<tr>
<td>jechać</td>
<td>jeździć</td>
<td>(to ride)</td>
</tr>
<tr>
<td>lecieć</td>
<td>latać</td>
<td>(to fly)</td>
</tr>
<tr>
<td>leżć</td>
<td>łazić</td>
<td>(to crawl)</td>
</tr>
<tr>
<td>nieść</td>
<td>nosić</td>
<td>(to carry)</td>
</tr>
<tr>
<td>pełznąć</td>
<td>pełzać</td>
<td>(to crawl)</td>
</tr>
<tr>
<td>pędzić</td>
<td>pędzić</td>
<td>(to run)</td>
</tr>
<tr>
<td>płynąć</td>
<td>płynąć</td>
<td>(to float)</td>
</tr>
<tr>
<td>sunąć</td>
<td>suwać</td>
<td>(to slide)</td>
</tr>
<tr>
<td>toczyć</td>
<td>taczać</td>
<td>(to roll)</td>
</tr>
<tr>
<td>wlec</td>
<td>włościć</td>
<td>(to lead)</td>
</tr>
<tr>
<td>wieźć</td>
<td>wozić</td>
<td>(to cart)</td>
</tr>
<tr>
<td>wlec</td>
<td>włościć</td>
<td>(to drag)</td>
</tr>
</tbody>
</table>
It would be totally implausible to analyse these pairs as completely independent lexical items given that both members in each pair share precisely the same manner of motion specification. Furthermore, as will be seen shortly, they interact morphologically. For terminological purposes the first member in each pair can be called DETERMINATE, and the second INDETERMINATE. The following sentences are designed to give the reader some feel for the difference between "iść" ('to walk' - determinate) and "chodzić" (its indeterminate counterpart).

Suppose I look out of my window and see a child in a school uniform marching off in the direction of a school. I can neatly describe precisely this state of affairs with sentence (30):

(30) Idzie do szkoły. — determinate
(He's walking to school.)

(31) Chodzi do szkoły. — indeterminate
(He walks to school.)

As suggested by the glosses, the use of (31) is totally impossible in this sort of context — UNLESS of course I were prepared to commit myself to this scene as one instance of a habitual series of similar 'walkings'. In fact, (31) can felicitously be used in its habitual sense even if the child in question is actually asleep at home at the time of utterance. (Interestingly, (31) has in addition developed the additional meaning 'he attends school', where the manner of locomotion is totally unknown or of no concern to the speaker; note that Polish
has no general all-purpose equivalent to the English verb 'to go'.

Indeterminates, however, do not invariably have to be used habitually. Other uses are illustrated below:

(32) Chodzi po pokoju. - indeterminate
(He is walking all around the room.)

(33) Moja córeczka już chodzi. - indeterminate
My little daughter already walks
(My daughter can already walk.)

Sentence (32) has two distinct readings. The one indicated by the gloss pertains to a situation occurring in the here-and-now. In this sense, as in (30), the speaker is describing no more than that state of affairs going on at the time of utterance. The crucial contrast between (30) and (32) lies in the adverbial that accompanies the verb: The phrase 'to school' in (30) can be described as Goal-Directed, while the adverbial in (32) (all around the room) is not. Rather it conveys a sense of aimlessness, of a 'walking' that consists of numerous 'sub-walkings' the sum of which must not tend to any particular goal. (32) has in addition a habitual interpretation - in this it parallels (31).

Sentence (33) reveals another dimension of the indeterminate - it is a sentence with modal force (on its most salient interpretation). Notice that unlike the English gloss, the Polish version of (33) 21.

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21. Even the English verb, non-committal as it is about manner of motion, is not quite 'all-purpose' insofar as it possesses a deictic component.
contains no morpheme that could be called a modal of possibility. The potential reading arises solely from the indeterminate imperfective. Needless to say, this interpretation of the sentence tells us nothing about what is happening at the time of utterance – it can easily be said by a boastful parent whose nine-month old daughter is currently sound asleep. The asserted potential to walk, however, is one that seems to imply possible realization in numerous different circumstances.

Summarising, a determinate imperfective pertains to that which is both actual and goal-directed. Should either of the latter two elements be missing, the indeterminate variant must be used. The indeterminate can also assert the habituality of an event of motion (whether it is occurring in actuality or not). Note incidentally that this range of options for indeterminate imperfectives contrasts sharply with the restricted sort of imperfective doublets discussed in (9). For such doublets, the suffixed form is necessarily habitual. Further, as the reader may have noticed, two verbs ("nosić" = 'to carry', and "chodzić" = 'to walk') enter into both formations (i.e. both (9) and (29)).

For present purposes what is most relevant are the possibilities of

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22. We don't always get precise determinate-indeterminate complementarity because of the 'indeterminate' (!) nature of observations about the world; Śmiech (1979) notes that either of "iść" or "chodzić" is possible in "Wóz robi koła, a on idzie/chodzi za nim" = 'He's following a car(t) which is going in circles'. Such cases are remarkable because they are quite hard to construct.
further morphological operations on determinates and indeterminates.

Consider the verb "DOchodzić". It turns out that this verb has two quite distinct uses:

(34) a. DOchodzimy do szkoły.
   (We're (now) arriving at school.)

   b. DOchodzimy tam do końca roku.
      (We'll go there till the end of the year.)

Phonologically and morphologically the verbs in (34a) and (34b) look identical, but note that the former must be glossed in the present and the latter in the future. By Test 1, (34a) is imperfective, while (34b) is perfective. This is readily confirmed by our other tests:

(35) a. Gdy DOchodziliśmy do szkoły, otrzymaliśmy dyplom.
   (As we were approaching the school, we received our diplomas.)

   b. Gdy DOchodziliśmy tam do końca roku, otrzymaliśmy dyplom.
      (Having gone there till the end of the year, we received our diplomas.)

(36) a. DOchodząc do szkoły, otrzymaliśmy dyplom.
   (As we were approaching the school, we received our diplomas.)

   b. DOchodziszy tam do końca roku, otrzymaliśmy dyplom.
      (Having gone there till the end of the year, we received our diplomas.)

As can be deduced from the translation, (35b) implies sequencing (as with an earning of a credential, say), while (35a) mandates containment (e.g. a teacher handing out diplomas to arriving students two blocks away from school). Further, (36a) corresponds exactly to (35a), and (36b) to (35b). Prima facie we have a puzzling violation
of the perfective-imperfective dichotomy. Note the usefulness of our syntactic tests for aspect in disentangling these.

Actually, the sixteen verbs of motion provide us with a fair number of examples along these lines. I call the phenomenon 'perfective-imperfective splitting'. Consider "WYchodzić" and "Znosić":

(37) a. WYchodzę z domu.
    (I'm stepping out of my house.)
   b. WYchodzę sobie nowy dom.
    (I'll get myself a new house by a process that involves (inter alia) much walking.)

(38) a. Znoszę wszystko do piwnicy.
    (I'm taking everything down to the cellar.)
   b. Znoszę te stary buty do końca.
    (I'll wear out these old shoes till the very end.)

Once again (e.g. by Test 1) the (a) sentences are imperfective and the (b) sentences are perfective.

Given that Polish verbs of motion possess determinate and indeterminate doublets in addition to triggering perfective-imperfective splitting of the type just illustrated, a plausible hypothesis is to relate the determinates (say) with the imperfectives, and the indeterminates with the perfectives. Some support for this is offered by semantic shift phenomena. Thus corresponding to "nieść" (to carry), "nosić" means either 'to carry' or 'to wear' (cf. French "porter"). But the perfective (but not imperfective) "Znosić" is translated precisely as 'to wear out', indicating that prefixation of an indeterminate yields a perfective.
Further support for this view can be adduced from the existence of forms like "DOjác", "Wyjác", and "Znieć". By our tests, these are perfectives, and they result from adding a prefix ("DO", "Wy", "Z") to a simple imperfective which is determinate (i.e. to "iść", "iść", and "nieć", respectively). Proceeding in this way, imperfective "DOchodzić", "Wychodzić", and "Znosić" can be regarded as re-imperfectivised forms based on the perfectives "DOjác", "Wyjác", and "Znieć". The reader will recall that re-imperfectivisation is carried out by fairly intricate suffixation processes (which here are further clouded by suppletion).

One straightforward solution to verb of motion perfective-imperfective splitting then is to propose that imperfective "DOchodzić" comes from "DOjác" which comes from (determinate) "iść" (to walk), while perfective "DOchodzić" arises directly from the indeterminate "chodzić". Schematically:

(39) imperfective perfective imperfective
    iść --> DOjác --> DOchodzić
    chodzić --> DOchodzić

I will, however, not interpret the arrows in (39) to mean direct morphological derivation, given that the relevant stem suppletion process would be a violation of morphological cyclicity. Rather I propose that the arrows indicate operations on the aspectual

23. This would be to follow the lead of researchers like Striekałowa (1962), Piernikarski (1969) and Branicka (1985).
representations of the relevant verbs (and that these in turn are matched with morphological structures).

Having seen (the morphological reflexes of) some of the operations that can be performed on aspectual representations, we are in a position to advance hypotheses as to what these representations might look like.

1.5 THE THEORY

Aspectually, I propose that a simple imperfective such as "jeść" (to eat) or "iść" (to walk: determinate) should be represented as follows:

(40) □

This is to suggest a BLACK BOX\textsuperscript{24}. Speakers of Polish know all sorts of things about eating and walking – the former involves the mouth, the latter the legs (or possibly the hands, or one leg plus crutches); the former implicates swallowing and digestion, while the latter has intricate manner of motion properties associated with it differentiating it from running, hopping, skipping, etc. All of this information is present somewhere in the lexicon, but invisible to the aspectual system – hence the black box. For our purposes, the

\textsuperscript{24} Such boxes look more realistic on blackboards; I rely on the reader's imagination in this regard.
notation in (40) has two significant aspectual properties: it is a unit, and it can contain. These will be central to what follows.

A perfective verb will be diagrammed as follows:

(41)

From the point of view of aspect, all one can see inside the box is a DISTINGUISHED POINT. For certain purposes then the whole event may be identified with its distinguished point, and in fact in these instances I will capture the relation between tense and aspect by mapping the point immediately contained in a box to the TIME LINE (section 1.7). The choice of perfectivising prefix will tell us how to arrive at the relevant point from the lexical entry of any verb. With "DOjć" the crucial point is the step that marks arrival. "Zjeć" on the other hand induces a homomorphism between an eating and its (overt or implicit) direct object; the verb is one of consumption, so the crucial point in any event of 'eating x' occurs when the last morsel of x disappears. One can then be sure that the subject 'ate x'. Tenny (1987) refers to such a process as MEASURING OUT.

The box and point representation capitalises on a longstanding (if controversial) intuition in the Slavic aspectual tradition - namely, the correlation between perfectivity and punctuality. Note however that I am not claiming that "Zjeć" and "DOjć" are necessarily punctual events by virtue of their aspect. Their respective boxes contain much by way of detailed but hidden specifications, so we
cannot simply jump to any such conclusion. My claim, rather, is that certain grammatical operations treat "Zjeść" and "DOjeść" as if they were punctual - punctual with respect to their natural climaxes. Note how use is made here of the point as the minimal aspectual unit - one can draw nothing smaller.

One more notational device will be postulated. If determinate "iść" (to walk) can be thought of as a simple black box, its indeterminate counterpart "chodzić" will be represented as two:

(42)

```
  □ □
```

Part of the intuition here is to capture the parallel with those non-Indo-European languages which exhibit overt morphological or phonological reduplication. When such a process applies to a noun it typically turns singulars into plurals. With verbs a number of different (semantic) modifications arise (e.g. plurality of the subject, or intensivity), but the effect I am most interested in is a frequentative or habitual reading. The latter is abundantly attested in the literature - witness the following examples culled with glosses from Marantz (1982):

(43)

<table>
<thead>
<tr>
<th>Yidin'</th>
<th>đađama-n</th>
<th>'jump'</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>đađađađama-n</td>
<td>'jump a lot'</td>
</tr>
<tr>
<td>mađinda-an</td>
<td>mađimađinda-n</td>
<td>'keep walking up'</td>
</tr>
</tbody>
</table>
Karok

<table>
<thead>
<tr>
<th>Karok</th>
<th>parak</th>
<th>'to separate with a wedge'</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>parak-rak</td>
<td>'to split logs with wedges'</td>
</tr>
<tr>
<td>tasíř</td>
<td>'to brush'</td>
<td></td>
</tr>
<tr>
<td>tasin-siř</td>
<td>'to brush (repeatedly)'</td>
<td></td>
</tr>
</tbody>
</table>

Luiseño

<table>
<thead>
<tr>
<th>Luiseño</th>
<th>néči-</th>
<th>'to pay'</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>néč-niči-q</td>
<td>'pays in dribs and drabs'</td>
</tr>
<tr>
<td>núči-</td>
<td>'to squash'</td>
<td></td>
</tr>
<tr>
<td>núč-nuči-q</td>
<td>'keeps going (and) squashes things'</td>
<td></td>
</tr>
</tbody>
</table>

Akan

<table>
<thead>
<tr>
<th>Akan</th>
<th>'multiple activities and states':</th>
</tr>
</thead>
<tbody>
<tr>
<td>se?</td>
<td>'say'</td>
</tr>
<tr>
<td>sise?</td>
<td></td>
</tr>
<tr>
<td>s s ?</td>
<td>'light'</td>
</tr>
<tr>
<td>süs s ?</td>
<td></td>
</tr>
</tbody>
</table>

My proposal is that the habituality of the Polish indeterminate arises from the same device - :eduplication - (operating on aspectual representations) that applies in the overt morphology of such languages as those cited above. Note that in both cases an element is REPRESENTED exactly twice, but that this double appearance is INTERPRETED as standing for a series which typically has more than two (an indefinite number of) members. This proposal neatly subsumes the use of the indeterminate to express potentiality, given that what is asserted there is the possibility of a series of events, not a prediction of precisely one (possible) future happening or a description of just one odd past occurrence. In like manner, consider the implications of a directional adverbial accompanying a Polish verb of motion. (I will speak of the representation of the adverbial ASSOCIATING with the representation of the verb.) If the
representation of (say) 'to school' is associated with a single box corresponding to a single event, an actual, goal-directed reading results. Association to a representation containing two boxes naturally mandates interpretation as a habitual (or potential) series of goal-directed subevents (as only then is each (sufficiently large) subevent equally 'to school'). To obtain a reading for the indeterminate as occurring in actuality one needs an adverbial such as 'all around the room' which can in fact be taken as a property of all (sufficiently large) subwalkings of a 'walking al around the room'. I conclude that it is rather natural to represent 'chodzić' as 'iść' reduplicated.

A small technical point is worth noting. When a directional adverbial co-occurs with a verb like "chodzić", it is crucial that the adverbial not associate with only one of the two relevant boxes. Similarly we require that both boxes of "chodzić"-type verbs get mapped to the time line together rather than each acquiring its own tense independently. Hence the aspectual structure generated for "chodzić" will actually be the following:

(44)

This representation has the advantage of "chodzić" looking exactly

25. If such a situation were allowed we could not force the appropriate habitual reading of (31).
like "iść" from the outside, and since they are both imperfectives I take this consequence to be a desirable one. Incidentally, since the presence of the external box of "chodzić" is actually fully predictable, it can be created by a default procedure (prior to mapping or association). Lexically then we can represent "chodzić" ut supra (as in (42) above), or equivalently as "iść" plus an instruction to reduplicate. We will see further instances of 'lexical underspecification' later.

The derivation of (44) is of course rather trivial:

```
  \[ \text{[ ] [ ]} \rightarrow \text{[ ] [ ] [ ]} \]
```

The left hand side is the reduplicated structure sanctioned by the lexicon. Outer box introduction shows us that in the end one overall aspectual unit is being represented.

We have finally arrived at a point where we can reap the benefit of studying the Polish verbs of motion; we can at last say something interesting about the perfective-imperfective splitting in cases like "DOchodzić". I propose that we use only the machinery introduced heretofore (viz. points, boxes, and reduplication). I propose further that we capitalise on the intuition that imperfective "DOchodzić" is based on "D0jść", while perfective "D0chodzić" is directly related to "chodzić". The latter case is quite straightforward. Recall that "chodzić" is represented as in (44), and
"DO" introduces a distinguished point. Thus perfective "DOchodzić" must be the following:

(45)

Since the point is immediately contained by the outermost box, it maps to the time line like any perfective. Further (45) is to be interpreted as a series of 'walkings' with the property that the series as an entity is goal-directed. In sentence (34b) the goal of the relevant series is attained at the end of the relevant year.26

Turning next to imperfective "DOchodzić", we must begin with "DOjść", represented as in (41). The latter structure behaves like a single point. But we desire IMPERFECTIVE "DOchodzić", and so far all imperfectives map like boxes. Nonetheless we do have a default procedure that introduces outermost boxes, so that by invoking this procedure we arrive at:

26. Note that the introduction of the outermost box can probably be freely ordered with respect to distinguished point introduction. If the former occurs first we are safe, since we have already seen points introduced into boxes (in a relation of immediate containment). If the latter occurs first, the outer box will arise by the same default procedure that creates it in (44).
From an external perspective, (46) looks just like a simple box - hence imperfective aspect. Moreover, (46) was built out of the representation for "DOjśćć", as required.

Summarising,

The key observation is that a system rich enough to handle "jesć", "Zjesć", "iść", "DOjśćć", and "chodźić" can automatically account for "DOchodźić", in the sense of providing two representations for this type of verb. As demanded empirically, one of these representations is perfective, and the other imperfective.

Note too the natural classes implicit in (47). "DOjśćć", "DOchodźić" (imperfective), and "DOchodźić" (perfective) form a natural class by
virtue of bearing a morphological prefix, and they constitute an
aspectual class by having a point somewhere in their representations.
Since this correlation was deliberately built into the system there is
nothing unexpected here. Naturally, "iść", "chodzić", and the
imperfective version of "DOchodzić" share the imperfective aspect, and
they all map like boxes as opposed to points. In part, the paucity of
our notational system leads us to this situation. More interestingly,
"chodzić", (perfective) "DOchodzić", and (imperfective) "DOchodzić"
all share a morphological realisation of a stem. This final natural
class is captured precisely by picking out those forms in (47) that
have a box inside a box. In this way the relation of aspectual
structure to overt morphology is naturally capturable. Further no
diacritic features seem to be needed.

One should note that while "chodzić" and (imperfective) "DOchodzić"
share a (stem) morpheme, the former (as a verb) is not to be viewed as
a proper subpart of the latter verb. Rather, (imperfective)
"DOchodzić" must be more closely related to the verb "iść", and it is
the representation of "iść" that appears as a proper subpart of the
aspectual structure of (imperfective) "DOchodzić", not that of
"chodzić". One can capture these relations as follows. The (single)
Polish lexical entry for walking contains two meaningful forms: a
simple box, and that box reduplicated. (Call these walk-1 and walk-2,
respectively, for purely mnemonic purposes.) This lexical entry also
has information about a stem (that of "iść"), which may appear as a
suffixed form (suppletion yielding "chodzić"\textsuperscript{27}). The latter, by dint of suffixation, encodes box-layering (box-inside-box). This is all that need be stated about the correspondence between walk-1 and walk-2 with "iścić" and "chodzić" - one need not explicitly label the aspectual meanings walk-1 and walk-2 with particular stem forms. Walk-1 is just a single box, which implies that it cannot be pronounced "chodzić"; the only alternative is "iścić". (The same holds for perfective versions of walk-1, e.g. "D0iścić".) Walk-2 must surface in box layered form, which means it cannot be expressed by "iścić"; one uses "chodzić" instead. (The same applies to perfectives of walk-2, such as "D0chodzić".) Furthermore, since a re-imperfectivised form of walk-1 (e.g. imperfective "D0chodzić") must contain a box inside a box, one also pronounces it as containing the sounds (but not the verb) "chodzić". Of course the meaning remains tied to walk-1. This logic applies to all the so-called verbs of motion.\textsuperscript{28}

1.6 EXCURSUS ON PREFIX INTERPRETATION

At this juncture, it is worth asking where our system of representing aspect stands with respect to the fundamental generalisation stated in (10) - viz. that modulo distributive "P0"

\textsuperscript{27} Pairs like "bieć"-"biegać" show the suffix more clearly.

\textsuperscript{28} What distinguishes 'verbs of motion' from other verbs is the existence of (for instance) walk-1 and walk-2, but only of eat-1 (without any eat-2).
and accumulative "NA" one cannot add more than one aspectual prefix to a Polish verb. Prima facie it may appear that an indefinite number of prefixes should be possible simply by constructing representations with sufficiently many distinguished points. It is important, however, to bear in mind at this stage the formal difference between REPRESENTATION and INTERPRETATION²⁹. Consider a reduplicated structure like (42): In it we represent exactly two boxes, but we interpret them as an indefinite series (and crucially not as a pair of events). Along similar lines, a point will be legitimate (or licensed) only if it is interpretable. And I have already sketched (in a very informal way) how such an interpretation is to be carried out. A first approximation is to say that the distinguished point must mesh with the rest of the structure in which it is embedded, providing the latter with a kind of climax.

Exactly how this climax is to be constructed depends on the nature of the particular prefix under consideration as well as on the lexical semantics of the verb root. (The interaction of these two factors determines prefix choice, especially in borrowings and coinages.) The prefix "Z", as mentioned above, is particularly closely tied to the notion of 'measuring out'. Thus I analysed "Zjeść" (to eat up) as measuring out a meal in terms of morsels. This measuring procedure has a natural climax — namely the end. The following verbs (among many others) can be accounted for similarly:

29. In mathematical logic, the corresponding distinction is that between 'syntax' and 'semantics'.
Note that with the final perfective example one either counts blows in order to deliver a sufficient number, or one wields a hammer some number of times to convert a pile of nails and pieces of wood into a crate or some other object of furniture. 30 Besides verbs of construction and destruction, "Z" also occurs with verbs of falling. Here a very natural scale is provided for the measuring process: e.g. "Spadłem 2 metry" (I fell 2 metres), "Woda spływa po ścianie" (Water is flowing down the wall).

The prefix "Z" tends to contrast quite sharply with "ZA", for which the climactic point can be thought of as a sudden crossing of a boundary. We have already encountered the verbs "Zakończyć" (to conclude, see (1)) and "ZAczyć się" (to get absorbed in/ to lose oneself in reading; see (2)). The former verb indicates the crossing of a boundary (either from partial existence to full existence, or from 'ongoing-ness' to 'non-ongoing-ness') with respect to a direct object by giving it an ending. The latter verb marks the entry into a psychological state. "ZA" frequently occurs with verbs of killing,
since there we have a very clear boundary between life and death:

(49) dusić (to strangle) ZAdusić (to kill by strangling)
strzelić (to shoot) ZAstrzelić (to shoot and kill)
tluc (to pound) ZAtluc (to pound to death)
Agazować (to gas to death)
Adziobać (to peck to death)

We have also seen "ZApoczątkować" (to begin), and "ZAcząć" (to start). The duality of starting-finishing or of entering-exiting is important and will be encountered again.

When "Z" and "ZA" can both occur with a particular verb root a sharp contrast in meaning is typically generated. Thus we find contrasts like the following:

(50)
Spalić (to burn up) ZApalić (to light)
Zliczyć (to count up) ZAliczyć (to include, count in)
Spisać (to list) ZApisać (to enrol; to note down)
Zbić (cf.(48)) ZAbić (to kill)
Spaść (to fall down) ZApaść (to fall (of nightfall))

Here "Spalić" is a verb of consumption and implies that all of some object has been destroyed (measured out) by a process of burning;

"ZApalić" signifies the transition from the state of not being alight to that of being alight. In like manner, "Zliczyć" involves going through some object (which has to be plural or collective) counting it up, while "ZAliczyć" merely denotes crossing the boundary between exclusion and inclusion (and can easily take a singular object). This logic applies all the way down the list.

For several dozen verbs the contrast is much more subtle, but often
it can still be detected with sufficient effort. For instance, 'to shock' can be expressed as either "ZAszokować" or "Zszokować". However the former is more fully glossable as 'to give a shock to; to greatly surprise'; the latter is closer to 'to thoroughly shake up' - indeed it is explicated via the synonym "WStrząsnąć" (to shake) in dictionaries, thus conveying the notion of a measurable process (rather than simple boundary crossing). Verbs denoting loss are intriguing: Polish allows both "ZAgubić" and "Zgubić", both "ZAtracić" and "Stracić" (all four: 'to lose'), plus a few others. Here "ZAgubić" appears to be far more of an event with dire consequences or firmer finality then "Zgubić". Interestingly one says "Stracić pieniądze na handlu" (to lose money in financial dealings) rather than "*ZAtracić pieniądze na handlu" - a clear correlation between amounts and measurability. Similarly "ZAtracić się w pracy" (to immerse oneself totally in one's work) contrasts with "*Stracić się w pracy", as only "ZA" can adequately express the crossing of a psychological boundary. These judgments are clear, but assessing comparable pairs can often be rather delicate. With this caveat, I take the basic fact to be established.

The notion of a boundary ties in very nicely with the meaning of the

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31. Note that both are clearly based on "szok" = 'shock', providing typical evidence of productivity.

32. Thus "ZApytać się" and "Spytać się" (to ask a question) seem to be synonymous; still the curiously optional reflexive with this verb indicates that it is special - e.g. its acquisition will require special memorisation.
preposition "za" = 'behind'. If you stand 'behind the line' then the line constitutes a boundary between you and the speaker or some other relevant entity. As for the 'intrinsic' sense of 'behind', if you stand 'behind the television' then the TV set stands as a boundary between you and anyone who interacts with the TV in the normal way (i.e. by watching it). Recall from table (4) that the prefix "Z" corresponds to two homophonous prepositions: "z" (plus Instrumental Case) meaning 'with', and "z" (plus Genitive Case) meaning 'out of; off of'. Historically one can trace two resulting prefixes: "S" and "Z" respectively. Voice assimilation (converting s to z, and z to a, in the appropriate contexts) provided PRESSURE for merger. I would like to claim that the merger was ALLOWED because a compromise was available semantically. It seems that an abstract notion such as 'measuring out' provides the necessary link between the comitative and ablative senses. Any real-world instance of "Zjeść obiad" (to eat dinner) necessitates a transformation from being WITH a dinner to the dinner going OUT OF existence. This transformation is precisely the process of measuring the dinner out into morsels. "Zbudować dom" (to build a house) is a transformation from coming out of non-existence (or mere planned existence) to a state of fully being with the builder(s). The construction connects the two extremes, again by a scalar type of process. Interestingly, when one is concerned SOLELY with the ablative sense of "z", the prefix that surfaces is "WY". Thus contrast "Woda Spływa na dół" = 'The water is flowing down' (traversing the vertical dimension) with "Statek WYpłynął z portu" = 'The ship left the port' (where only the exit matters). This helps to
explain a 'gap' in the prefix-preposition correspondence table
(4).33

The moral of the foregoing is that a prefix (and thus its corresponding distinguished point) is licensed only if the accompanying verb expresses the right sort of process (a scalar one for "Z"; a potentially drastically resultative one for "ZA"). Consequently combining these two prefixes will be ruled out. For suppose that "ZA" is added to a verb with structure (40). The representation in (41) results, and as mentioned above the whole event is now identified with the distinguished point for aspectual purposes. Introducing a new point for "Z" into the box would be equivalent to introducing a point into a point - I take this to be senseless. Introducing a new point outside the box (and then enclosing both in a default outermost box) will not be possible either, since the new point must be interpretable as the climax of a process, yet all we see of the available process is one point. Thus since no second climax corresponding to "Z" can be assigned a meaning, the representation for the doubly prefixed verb will be ill-formed. (Note however that the PREPOSITION "zza" = 'from behind' exists and is well-formed.) I suspect this reasoning is quite general.

To substantiate the claim in the previous sentence necessitates a study of each prefix. Here I will only outline the situation with respect to "DO", as it illustrates an additional point. A verb like

33. I suspect that "ROZ" is also related to "z".
"DObudować" has two distinct senses. It can mean 'to finish building something' or 'to add to a building' (e.g. a new room to a house). What is common is that prior building is presupposed. The event of "DObudować" adds further building (including a climax) to the presupposed building. I thus call "DO" an END-PHASE prefix. It is interesting that the afore-mentioned climax can occur at the start or the end of this end-phase. If it occurs at the end, we obtain the 'complete building' reading. Conversely if it occurs at the start, the resulting sense is that of 'add to by building'. In any event, the prefix "DO" mandates a process tolerating an end-phase for purposes of licensing.

Notice that the entrance-exit duality that we saw clearly in "ZA" also turns up (perhaps surprisingly) with "DO". In actual fact, I take this to fulfill a prediction made by our aspectual notation. Given only points, boxes and reduplication we have no means of aspectually encoding temporal order. Consequently any temporal order (compatible with the sense of the objects to be licensed) should be allowed. So far it is. Of course, languages do have morphemes expressing ordering; my claim is that they typically belong to parts of the grammar outside of aspect (e.g. tense).

Before leaving this section on multiple prefixation it is incumbent on me to say something about the 'systematic exceptions' to (10),

34. "DOMalować" (to paint), "DODrukować" (to print), and "DOsypać" (to add, e.g. sugar) inter alia work the same way.
viz. about distributive "PO" and accumulative "NA". The sentences below illustrate these prefixal usages:

(51) a. PO-Ś-cinała drzewa w ogrodzie.
    She cut down the trees in the garden (one by one).

    b. PO-ZA-bijał kurczaki w kurniku.
    He killed the chickens in the coop (one by one).

    c. PO-WY-wieszała flagi na ulicy.
    She hung flags in the street (one by one).

    d. PO-W-nosił meble do mieszkania.
    He carried the furniture into the apartment (piece by piece).

(52) a. NA-PRZY-woził dzieciom wiele prezentów.
    He brought the children many presents (there being many trips involved).

    b. NA-S-praszara pekno gości.
    She managed to invite stacks of guests.

Each of these sentences involves a series of accomplishments. In (51) they are distributed over some clausal constituent (which will therefore typically be plural or collective); in (52) there is simple accumulation. Thus (51c) contrasts with (*) "PO-Wywieśała flagę na ulicy" (She hung a flag in the street) where a distributive reading is not (normally) possible. Thus distributive "PO" and accumulative "NA" both allow the presence of another prefix, and both mandate readings which include a series component. 35

I propose that the special behaviour of "PO" and "NA" in the

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35. As we might predict, distributive "PO" can co-occur with the homophonous non-distributive perfectiviser "PO": e.g. "PO-PO-wracali" = 'They returned (one by one, or in groups)'.

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aspectual system should be related to special properties of "po" and "na" elsewhere in Polish. It is well-known that, even as a preposition, Polish "po" has a distributive sense. Thus the following pairs of sentences are basically synonymous:

(53) a. Dałem dzieciom po 3 jabłka.
   b. Dałem 3 jabłka każdemu dziecku.
   (I gave each child 3 apples.)

(54) a. Chcieli po 10 dolarów.
   b. Każdy z nich chciał 10 dolarów.
   (They wanted 10 dollars each.)

In (53a), despite the absence of a morpheme like "każdemu", the preposition "po" ensures that the set of three apples is multiplied (distributively) by the total number of children. The preposition "na" also sometimes has this multiplicative property:

(55) a. Czytam 100 książek na rok.
   (I read 100 books per year.)
   b. Idę tam 2 razy na rok.
   (I go there twice a year.)

My specific suggestion is that there are versions of "PO" and "NA" that have inherited the multiplicative property of "po" and "na"

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36. It may be objected that other prepositions can be used here (e.g. "2 razy do roku"; "raz w roku"). However what is relevant for my purposes is that it seems that only "na" and "po" have the multiplicative property while taking a complement (construable as being [see Łojasiewicz (1979)]) in the Accusative Case.
respectively. Aspectually, multiplicativity is naturally interpretable as reduplication. Thus "PO-Z-jadać" or "PO-WY-kańczać" will be represented as follows:

(56)

Here the topmost (i.e. visible) distinguished point pertains to a process (an indefinite series represented via reduplication). It thus has something onto which it can impose a climax and so is indeed licensed, but only when the reduplication is permissible. This is the result we need. (Concretely, the climax in a sentence like (51a) is reached when the direct object is exhausted, i.e. all the trees cut down.)

The derivation that yields (56) can be summarised by the following schema:

(kończyć) (WYkończyć) (PO-WY-) PO-WY-kańczać

Recall that prefixes with multiplicative power trigger both reduplication and point introduction - this is illustrated in the penultimate step above.
In standard Polish any perfective verb that is multiprefixed by virtue of distributive "PO" or accumulative "NA" must (from a purely formal point of view) result in an imperfective form when the outermost prefix is omitted. Thus, corresponding to (51), "Ścinała", "ZAbijat", "WYwieszała", and "Wnosik" are all imperfectives. Technically speaking they are re-imperfectivised perfectives, represented as (46). Re-imperfectivisation is brought about by box-layering, with the box-inside-box structure suffixationally sanctioned. It is thus no surprise that the verbs corresponding to representation (56) have the same suffixal properties as those corresponding to (46). (This language-particular aspect-morphology correspondence rule was referred to towards the end of section 1.5 when discussing natural classes among the verbs of motion.)

1.7 ASPECT AND TENSE

Any adequate system for representing Polish aspect has to tie in with the rest of the grammar in such a way as to explain most or all of what we called Tests 1 - 7. A number of these tests rely on the

37. This does not hold for all regional dialects - cf. Piernikarski (1975), Kawka (1987), among others. Cassubian for instance allows forms like "PO-Ś-cięła". (Kawka also mentions regional dialects with apparent multi-prefixation but where the prefixes play an 'expressive' rather than an aspectual role.)

38. Regarding the dialects of the previous footnote, one might say that since the outer box in (56) is independently necessary (in order to show that the three entities within it constitute one unit), it does not require separate morphological sanctioning.
interaction between aspect and tense. I have already alluded to a particular way of representing tense on several occasions, so that now is an appropriate time to outline a fuller theory of the TIME LINE.

The basic idea of a line to represent the relation between the past, the present, and the future is anything but novel. See for example Reichenbach (1947), Hornstein (1977), and Comrie (1985). However I would like to introduce a few non-obvious details.

The whole of the past is clearly an interval, as is the future. To keep the vocabulary of the tense system minimal I propose that the present should also be considered an interval. On the one hand this move has the virtue of consistency; on the other it makes some rather interesting predictions about the relation of tense to aspect. Notice that if tense can deal only with intervals (and with their ordering), while aspect is restricted to points and boxes, then their respective vocabularies are disjoint. This suggests that we should be able to find languages where the morphology of aspect is completely orthogonal to that of tense (even though both deal with temporal notions). Needless to say, the reader will not have failed to observe that a Slavic language such as Polish is an example of precisely this situation. Recall that in Polish the past/nonpast distinction is encoded via the "l"/"ł" morpheme, while prefixes and other suffixes carry the aspectual information. 39

39. The fact that there are languages (e.g. Romance) that mix tense and aspect morphology does not falsify my claim; Romance typically also provides portmanteau forms for Person and Number, but languages
All the same Tense and Aspect interact in non-trivial ways, and it is this that is the focus of our concerns. In particular I will try to give an explanation for the behaviour pattern earlier called Test 1.

As already mentioned, the time line is to be thought of as having only intervals visible. By this I mean that the language faculty can make use only of intervals when dealing with (portions of) the time line. One of these intervals will be special - call it the 'now'. Anything mapped to a region entirely before the 'now' will of course be past; the future is analogous. To qualify as a legitimate present however the mapping will have to activate a region properly containing the 'now' on both the left and the right. My initial reason for this kind of constraint is based on intuitive psychology and can be called CONTINUITY. Basically, what I rule out is the activation of a sharp boundary between the 'now' and the past (or between the 'now' and the future). Certainly we do not feel as if our currently experienced 'now' can ever be sharply split off from the past or the future. If anything, we would say that 'now' continuously becomes the past (and the future, or a future, becomes 'now'). Since in the theory outlined such as Miskitu show us that these two dimensions of inflectional morphology can function fully independently. For the purposes of the above paragraph Polish and Miskitu are the crucial cases; Romance is just a complication. (Note that treating Polish and Miskitu as complications of the Romance system is highly implausible, leading as it would to numerous disjunctions and circumlocutions.)

40. Other subsets of the line, such as singletons, the null set, or randomly scattered sets are to be thought of as inaccessible.
any grammatically present-tense event partakes partly of the past, is partly simultaneous with the 'now', and partly partakes of the future, some light is shed on why we should feel that these three are so absolutely inextricably tied together. This may sound a touch speculative, but shortly linguistic evidence will also be adduced.

By way of implementation, I take the time line to consist of irreducible QUANTA of time, one of which is marked 'now'. Quanta which are relevant to the truth conditions of a clause will be said to be ACTIVATED. Thus the continuity constraint in the paragraph can be illustrated as follows:

(57)

\[
\begin{array}{cccc}
\text{OK} & \text{now} & \ldots & \ldots \\
\text{OK} & \ldots & \ldots & \ldots \\
\text{OK} & \ldots & \ldots & \ldots \\
* & \ldots & \ldots & \ldots \\
* & \ldots & \ldots & \ldots \\
* & \ldots & \ldots & \ldots \\
* & \ldots & \ldots & \ldots \\
* & \ldots & \ldots & \ldots \\
\end{array}
\]

Basically, neither of the two boundaries of the 'now' can be boundaries of the activated region in a legitimate derivation.

Mapping an aspectual point (a minimal aspectual unit) to the time line
will activate precisely one quantum. Anything mapped like a box activates however many quanta it likes.

The basic effect of Test 1 now follows. For a past tense verb, either a perfective or an imperfective can legally be mapped to the relevant part of the time line. Whether the mapping is pointwise or boxwise, no discontinuity around 'now' will be created. In the nonpast, a box representing an imperfective can certainly be mapped legitimately to the present, where legitimately means without 'now'-discontinuity (cf. (57)):

(58)

\[ \text{now} \]

\[ \text{--------} \]

\[ \square \]

(\text{It can also be forced into the past or the future, with the appropriate "praesens historicum" or "praesens propheticum" interpretation.}) A perfective however maps like a point. Consequently it can only activate a SINGLE quantum, and thus cannot cover the 'now' without creating illegitimate boundaries. Since perfective presents are thus impossible, the result is that the most

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41. Note that black boxes can contain all sorts of hidden information inside.

42. Provided that the last quantum of the past is not one of those activated.
neutral interpretation of the Polish perfective nonpast will be as a future. This is precisely what Test 1 says.

The reader may object that the above deduction was directly built into the system. After all so far our only independent motivation is some rather abstract (though not necessarily un compelling) psychologising. And indeed if Polish (with its close Slavic relatives) were the only instance of this behaviour, the derivation would indeed be linguistically shallow. Fortunately however one can find a number of other non-related languages which seem to mandate a similar treatment.

Consider Finnish. In this non-Indo-European language, the aspectual distinction between perfective and imperfective is expressed not by verbal morphology, but via Case. In particular, imperfective aspect requires the Partitive Case for the direct object, while what is standardly called 'Accusative Case' \(^4^3\) carries perfective aspect, as illustrated below for the past tense:

\[(59)\]

\begin{align*}
a. & \quad \text{Hän luki kirjaa.} \\
& \quad \text{(PART.} \\
& \quad (\text{He was reading a/the book.}) \\
& \quad \text{b. Hän luki kirjan.} \\
& \quad (\text{He read a/the book.)}
\end{align*}

In the nonpast, the imperfective/perfective alternation tends to be accompanied by a present/future contrast:

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\(^4^3\) There is no distinct Accusative morpheme; rather zero, Nominative, or Genitive morphology is co-opted.
(60) a. Syötkö kalaa?
   PART.  
   (Do you eat fish?)

b. Syötkö kalan?
   (Will you eat a/the fish?)

c. Luen kirjat.
   (I'll read the books.)

d. Vien kirjeet postiin.
   (I will take the letters to the post.)

e. Kansa volitsee kansanedustajat.
   (The people elect the members of parliament.)

About sentences (a) and (b) the translator of Karlsson's 1983 grammar of Finnish adds the following footnote on page 95:

"Translator's note: structures like this, with a present tense resultative verb and an accusative object, often correspond to the English future form with will rather than the simple present, otherwise the resultative sense is lost. (Finnish has no equivalent future form.)"

The basic generalisation is the same that we encountered in Polish - a perfective cannot express the actual present without inducing discontinuity problems. Incidentally, sentence (60e) has a non-Partitive object but is glossed in the present, which indicates that habituals and generics (both of which say nothing about the ACTUAL 'now') will need special treatment (see chapter 2).

Georgian likewise exhibits a present to future shift with perfectives. The Georgian aspeectual system bears an uncanny resemblance to parts of the Slavic one. In particular we find aspectually perfectivising prefixes (though apparently no corresponding suffixation phenomena). Paradigms like the following

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are reminiscent of Polish:

(61)  c'er  (you write)
  cac'er  (tu l'inscriras)
  gadac'er  (tu le copieras)
  gamoic'er  (tu le commanderas: p.ex. un livre/journal)

Not surprisingly, in the past tense one finds a
perfective-imperfective opposition. Turning to the non-past, Vogt
(1971) firstly discusses one verbal type (standard examples are verbs
of motion) where prefixation essentially specifies a direction for a
present action. He then goes on to add (page 184):

"Au second type, c.-à-d. au type où le préverbe [préfixe] fait du
présent un futur, appartiennent la plupart des verbes transitifs,
et sans doute aussi la plupart des verbes intransitifs (en
particulier les passifs radicaux et suffixaux). Pour chaque
verbe de ce type il existe en principe un préverbe qui n'a
d'autre fonction que de faire exprimer au verbe le futur, sans en
modifier le sens. Avec le verbe "c'er" tu l'écris, et avec le
verbe "k'vdeba" il meurt, les préverbes sont "da-" et "mo-"."

(In the second type, i.e. the type in which a prefix makes a
present into a future, one finds most transitive verbs, and
undoubtedly also most intransitives (in particular, radical and
suffixal passives). For each verb of this type there exists in
principle a prefix the sole function of which is to express the
verb in the future without changing its meaning. For "c'er" (you
are writing it) and "k'vdeba" (he is dying) respectively, the
prefixes are "da-" and "mo-".)

I will return to some of the peculiarities of Georgian in chapter 4;
nonetheless even at this stage I can claim to have found support for
my position.

Our next brief case study is the Australian language Warlpiri. Hale
(1985) lists the following morphemes as constituting the core
aspectual system of Warlpiri: "ka-" (imperfective nonpast), "lpa-"
(imperfective past, imperfective irrealis), and "∅" (perfective nonpast/past/irrealis). The following examples are provided:

(62) a. Wawirri ka parnka-mi.
   (The kangaroo is running.)
   b. Wawirri-ipa parnka-ja.
   (The kangaroo was running.)

(63) a. Nantuwu-∅ parnka-ja.
   (The horse ran.)
   b. Ngaju-∅ -rna parnka-mi.
      I PERF 1 run NONPAST
      (I'll run.)
      (Let me run.)

The imminent future induced by a perfective nonpast as in (63b) actually contrasts with sentences containing the specific future morpheme "kapi-". Hence presumably the special glosses. I should mention that what I have called imperfective and perfective here are referred to by Hale as instances of CENTRAL and NON-CENTRAL coincidence, a distinction that crops up in several places in the grammar of Warlpiri. In particular it is detectable in (what correspond to) prepositional and complementiser systems. From our point of view it would be very natural to tie central and non-central to box and point representation (respectively). Intuitively only a distinguished point can focus coincidence (or interaction) away from the central (coincide as much as possible) mode.

Some support for this interpretation can be found in Hale's discussion of the non-central finite complementisers, which I would associate with point-like representations. Sentences like the following reveal the entrance-exit duality that seems to be a hallmark
of distinguished points:

(64)  Warnika rna rla warri rni, nyampu rla ku,  
      YUNGU rna katu rnu rra.  
      (I am looking for a snake around here, AS I RAN OVER IT.)

(65)  Nyampu rna rla warru nya nyi watiya ku,  
      YUNGU rna rdilykirdilyki paka rni.  
      (I am looking around here for a tree TO CHOP UP.)

Subsequently, in chapter 3, I will deal with prepositional systems.

As my final case study I wish to consider Miskitu, a language spoken
in Central America.44 The core of the Miskitu tense system for a verb
like "plapaia" (to run) is illustrated below:

(66)  plapina  (I am running)
      plapisma  (you are running)
      plapisa  (he/she is running)
      plapri  (I ran)
      plapram  (you ran)
      plapan  (he/she ran)
      plapamna  (I will run)
      plapma  (you will run)
      plapbia  (he/she will run)

Note that the present tense as given above comprises the present
participle ("plapi") plus the present tense of "kaia" ("to be": "sna",  
"sma", "sa"). In addition, one occasionally encounters a rather
different present tense with the vowel /u/:

44. Some of the facts below are discussed in Salamanca (1988).
Special thanks are due to my consultant, A. Avilés.
(I'm on the verge of drinking water.)

b. Mahka li auhwua.
(It's about to rain.)

compare: Pat li auhwa.
(It's already raining.)

c. Mahka li auhwi ta krikuia.
(It's just starting to rain.)

In light of the foregoing, a very natural analysis of the Miskitu u-present is as a present perfective. The shift to the future (as in (a)) would then be motivated by the theory we have outlined. The rather infrequent and somewhat subtle character of the u-present would follow from the need to find a special niche given the existence of the future in (66). Finally, (67c) would be yet another instance of the duality of entrance-exit. Another example (a somewhat more common construction) is:

(68) Yang na'minit wauhtaya kum danh takuna.
(I've just written a letter.)

In this way the special inceptive-completive nature of the tense under discussion falls neatly into place.

I should mention that positing (im)perfectivity for Miskitu is reasonably well motivated. Thus the past tense in (66) is fundamentally perfective, and an imperfective can be constructed with the present participle plus past tense of "kaia". The following sentences illustrate the expected resulting behaviour:
So much for globe-trotting in search of present-future shifts. It turns out, however, that the special character of the present is familiar even in English, where we find paradigms such as the following:

(70) a. I was building a mansion.
    b. I built a mansion.
    c. I am building a mansion.
    d. #I build a mansion.

(70d) is odd without a special\textsuperscript{45} (habitual) interpretation — it cannot inform us specifically about the actual 'now'. This result

\textsuperscript{45} I use the '#' sign to indicate what I call 'special English' — sentences which are grammatical under interpretations which require special construal. For the moment I will be concerned only with ruling them out under 'normal' conditions. In chapter 2 I will indicate what extra moves need to be made to arrive at the requisite meaning.
follows straightforwardly if we assume that the VP 'build a mansion' is to be aspectually represented as a box with a distinguished point, and that the 'simple' tenses of English are mapped directly to the time line just like all tenses in Polish. These assumptions certainly seem to be required for sentence (70b). As for the progressives, the standard approach is to say that endpoints somehow disappear. I propose analogously that the progressive is an aspectual operation COVERING UP DISTINGUISHED POINTS (i.e. rendering them invisible). Once this operation is executed, the output will have to map to the time line like a box. Thus both (70a) and (70c) are licensed.

Some support for my approach can be found by examining the corresponding paradigm for statives:

(71) a. *I was knowing the answer.
    b. I knew the answer.
    c. 'I am knowing the answer.
    c. I know the answer.

Here the verb phrase must be a single box, knowing not lending itself to climaxes. Consequently (71b) and (71d) are perfect. On the other hand, (71a) and (71c) are ruled out, there simply being no distinguished point to which the covering-up operation, corresponding

46. In model-theoretic treatments one considers a properly containing interval — see Dowty (1979) for an overview. More directly, Smith (1983:482) puts it this way (emphasis mine): "Progressive aspect presents an interior perspective, from which the ENDPOINTS OF AN EVENT ARE IGNORED. Thus the progressive indicates a moment or interval of an event that is neither initial nor final."
to the progressive can apply. I take this explanation to be superior to the rather common one claiming that since progressivisation yields a state, to progressive a stative is redundant.\textsuperscript{47} I do not see why redundancy should yield such sharp ungrammaticality (as opposed to infelicity). One might object that the analogous problem for my theory is the barring of vacuous covering-up. To this I respond by saying that we have already seen that aspectual operations (unlike, say, surface constraints) cannot apply vacuously: Vacuous application of distinguished point introduction would for example license forms like *\textsc{wy-wy-konczyć}, or *\textsc{wy-wy-wy-wy-kąńczać} (where the superfluous prefixes are putatively licensed by the distinguished point that is already there once the first "\textsc{wy}" is added).

At this stage a number of problematic issues may seem to arise. One problem is that some statives are progressivisable:

(72) John was loving Mary more and more each day.

More seriously, consider the paradigm for activity verbs like 'run' or

\textendnote{47}{See Vlach (1981) and Langacker (1982). On the other hand, Smith (1983) points out that although there are strong similarities between progressives and statives, differences are nonetheless detectable. Thus we find contrasts like the following (page 485):

?* Mary mowed the lawn before Bill was watering it.

I met Susan before she owned the yacht.

In summary (page 490), Smith concludes that statives are more "flexible in interpretation" than progressives. From my point of view this is to be expected given the very sparse aspectual structure I have assigned to states.}
'sing':

(73)  a. Who was singing at 3 pm yesterday?
    b. Who sang yesterday?
    c. Mary is singing.
    d. #Mary sings.

This is precisely the pattern that we saw earlier when studying the accomplishment 'build a mansion'. To account for it we will surely need distinguished points. However it would appear that what distinguishes accomplishments from mere activities is precisely the absence of a distinguished point. Is it possible for an aspectual representation to both have a (visible) aspectual point and to not have one?? We seem to have reached a flat out contradiction. Fortunately, the problem is only apparent.

Consider what we have available within our aspectual vocabulary: points, boxes, and reduplication. Given only this there is one simple kind of representation available which we have not hitherto considered: a reduplicated point:

(74)  

There is a sense in which (74) has A (= at least one) aspectual point and at the same time does not have A (= exactly one) point as well. Nothing so far rules (74) out, and in fact it looks like a very natural way of representing activities. The latter typically consist
of some ATOM of activity repeated over and over again. With accomplishments one of these atoms is special, and in fact we have given it the title of distinguished point. With activities there is merely indefinite repetition, which is precisely what our reduplicative mechanism encodes. Given the structure in (74), the paradigm in (73) now follows straightforwardly. Sentence (73b) is clearly unproblematic. The progressives (73a,c) are now grammatical since the operation of covering distinguished points (universal quantification assumed) can apply (non-vacuously) and will yield boxes. Finally (73d) is odd since the two points in (74) will be able to activate at most two quanta on the time line, and so will not be able to properly cover the 'now' on both left and right (as mandated by continuity).

I analyse sentence (72) via structure (74) as well. It is a case of imposing points on the black box of a stative, just as a sentence like 'At last he knew the answer' requires the imposition of exactly one point (i.e. structure (41)). Once points are imposed, progressivisation can properly apply. It is enlightening in this

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48. Once again use is made of the minimality of the point as an aspectual unit; it must be repeated to yield an activity.

49. Parsons (1989:235) writes: "A process itself is actually a series or amalgam of events. A walking process is just a bunch of overlapping walking events - small ones, large ones, and so on. A so-called 'process verb' is a verb which has the property that when it is true of an event e it is typically true of many unlimited 'subevents' of e which have the same subjects and the same objects." Likewise consider Dowty (1979:173): "The definition of 'walk' (an activity) would, should we wish to spell it out, seem to involve the accomplishment of 'taking a step'."
connection to cite the relevant literature dealing with special sentences of the type '# She was liking the play' (which is not the same as 'She liked the play'). Smith (1983:497) writes 50:

"Progressive statives present a state as an event, endowing the state with the properties of events. The relevant properties of events seem to be activity and successive stages, which together constitute the dynamics that differentiate events from states." Brinton (1988:40) adds: "Thus the effect of the progressive with a state is to portray the state, which is not dynamic, AS IF dynamic." From a technical point of view, I represent 'was liking' as (74) together with point hiding.51 This yields a box, but with a very special interpretation — hence the 'as if dynamicity' of the foregoing quotation.

In order to license (74) for activities like 'run' or 'sing' in English, I will assume that these verbs have the following aspectual structure in the lexicon:

(75)

This single point (which can be thought of as a single sung note, or a single stride of a runner) can be reduplicated (and a default outermost box created) in order to yield an activity. The derivation proceeds as follows:

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50. N.B. For Smith, an 'event' is a non-stative situation.

51. Hiding is not deletion — it is more akin to leaving a trace. I assume deletion is unavailable for reasons of Recoverability.
Alternatively, in the presence of a direct object ('run a mile', 'sing Waltzing Matilda') the point in (75) can count as distinguished (a climax), so that with the simple addition of a default outermost box we arrive at the standard structure (41) for accomplishments. The close relation between accomplishments and activities (the former often being the latter plus direct object) is thus neatly captured.\(^{52}\)

It is noteworthy that English verbs of motion tend to specify some kind of manner of motion if they are activities/accomplishments (walk, run, swim), but not if they are achievements (arrive, depart).\(^{53}\) The latter seem to be naturally representable as (41) already in the lexicon - they inherently express the climactic point of some process. With verbs represented lexically as (75) on the other hand we see one atom of some sort of activity. It is then natural to ask what manner of activity the point is an atom of. In fact, a structure like (41) will tend to hide information inside a black box; one like (75) will necessitate addition (via specific acquisition) of relevant

\(^{52}\) With respect to this relation, Dowty (1979:61) writes: "In fact, I have not been able to find a single activity verb which cannot have an accomplishment sense in at least some special context." As an extreme case he mentions the seemingly irresultative 'look for', which is actually construable as an accomplishment in the context of library searches.

\(^{53}\) Levin and Rappaport (1988) emphasise this in their typology of motion verbs.
differentiating characteristics. These will have to pertain to manner, given that a single point has no (other) structure to which properties can be ascribed. If further structure is present (as in the case of 'arrive', represented as (41)), it is this overall architecture that will have to be characterised. The individual atoms of activity leading up to the climax of 'arrival' are not overtly visible in the representation, and so cannot have something like a manner of motion associated with them.

As support for this system of representation, recall that verbs like 'arrive' and 'depart' are generally considered to be unaccusative, while 'run' and 'walk' are not. Unaccusativity is a special kind of intransitivity whereby the sole argument of a verb originates in (and often binds a trace in) direct object position. We have seen a number of occasions where in structure (41) the distinguished point is clearly associated with the (chain having a member in) direct object position (cf. Tenny (1987)). Thus the aspectual use of Case in Finnish, or the fact that the 'measuring out' of Polish "Z" and the boundary crossing of Polish "ZA" (cf. "ZAkończyć list" = 'to conclude the letter') apply with respect to direct objects can all be seen as good examples of this. In fact, in a language like English where there is very little by way of morphology to encode differences in aspectual structure I would like to propose that the point in structures like (41) is quite generally licensed by an element in

54. Perlmutter (1978) and Burzio (1986) are two standard references.
direct object position. This implies that 'arrive' (having only one argument) must be unaccusative, contrasting with a verb like 'run', which in a sentence like 'I ran' corresponds to structure (74). Where 'run' does have a direct object (e.g. 'I ran a mile'), structure (41) is again the appropriate one. One would also expect (41) to encode 'I ran to the store' (there being a climax here) - and in fact it is suggested in the literature that the latter verb phrase does behave like an unaccusative (cf. Coopmans (1989) on locative inversion in English, and Levin and Rappaport (1988) for general discussion of the issue). Auxiliary selection facts for 'run' in Italian also tend in this direction: One finds "essere" with a specifically directional PP, and "habere" otherwise. (Dutch is reported to have a similar effect.)

Summarising the situation for English:

\[(76)\]

in lexicon

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               .
               .
               .
               .
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final structure

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               .
               .
               .
               .
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know the ans. run run a mile arrive

Only the middle two cases have non-trivial derivations. Note how naturally the Vendler classes (see the Introduction for references) fall out of a system of representation designed first and foremost to capture aspect in Slavic. Actually, if one looks only at the final structures, one sees three types. They fall in squarely with the

Much of the preceding discussion stems from the special character of the present tense, as indicated inter alia by Test 1. I wish to turn next to Test 3, where we must account for aspectual differences in the past tense. The relevant English sentences (Polish and Romance being analogous) are repeated below for convenience from (19):

(77) a. When you were walking in, he walked out.
   b. When you walked in, he walked out.

To handle temporal 'when', one initially plausible idea is to propose that it specifies a region on the time line within which another event must be located; cf. 'When did you do that?' 'On Tuesday'. The containment interpretation of (77a) then appears to be captured. In (77b), the subordinate clause would seem to activate only one quantum, so we might propose that 'when' licenses the expanding of the relevant interval (in the natural direction of progressing time). Then, if this expansion and the association of matrix and subordinate clauses in (77b) are freely ordered, two readings result: simultaneity and sequencing. Unfortunately the notion of expansion must somehow be blocked in (77a). Further, English progressives seem to wreak havoc under this approach:

(77) c. When you were singing, he was dancing.
   d. When I walked in, you were singing.

We must somehow get a coincidence relation in (77c) and a containment
(in the opposite direction to (77a)) in (77d).

Given these difficulties, I suggest a rather different line of attack. Suppose that contrary to appearances, temporal 'when' says nothing (directly) about the time line, but rather forces the aspectual structures of two events to be overlaid or MERGED. Naturally, the resultant structure must be a well formed member of our aspectual structure inventory. The basic cases call for overlaying or merging simple boxes (cf. (40); progressives can be viewed like this from the outside after progressivisation) and boxes with a point (cf. (41)).

Merging a box with a box results in a box - hence coincidence in (77c). Merging (40) with (41) will result in (41), so that in both (77a) and (77d) a climactic point occurs somewhere in the course of a longer lasting framing event. Finally, if (as in (77b)) (41) is merged with (41), the two original points will now either coincide (yielding (41) back again) or not (yielding (74)). Thus both readings for (77b) emerge naturally. Further the notion of IMMEDIATE sequencing (for (77b)) seems to be better captured under this account when compared to the earlier one. To the extent that our aspectual

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55. In this process two separate outer boxes become one. The reader might like to think of the operation as one analogous to the overlaying of overhead transparencies.

56. Recall that aspectual structures say nothing about ordering; I therefore suggest that the ordering of the two events on the relevant reading of (77b) should be assimilated to the problem of why a specific ordering (precedence) relation holds between causes and effects.
notation can readily capture rather delicate facts about sentence interpretation (such as those in (77)), I take it to be well supported.

The careful reader will not have failed to notice that the notion of MERGER was implicit in my account of Warlpiri complementation (section 1.7). Like Hale, I have taken complementisers to be more closely related to aspect than to say the time line. In fact my notion of merger is uncannily close to Hale's account in terms of 'coincidence'.

This concludes our discussion of Test 3 of section 1.3. Note that Test 4 is essentially a non-finite version of Test 3, hence I suggest a parallel account. The explanation for Test 5 (which involves complements to stopping and starting) should probably be assimilated to the facts discussed under the rubric of multi-prefixation (see section 1.6): Prefixation of say "ZA" (which the reader will recall exhibits inception-completion duality) cannot apply to an already prefixed form. I propose that for identical reasons, "zacząć" and "przestać" cannot syntactically co-occur with perfectives.

Tests 2 and 6 can be viewed as a species of agreement in respect. Thus in "będzie czytać" (he will read), "będzie" (he will be) is imperfective, demanding the imperfective and hence prefix-less "czytać". In "książka została PRZECzytana" (the book was read), "została" is perfective triggering the appearance of the prefix on
Finally, regarding Test 7, where imperfective verbs allow additional direct objects of temporal duration, one can appeal once again to a certain freedom of interpretation that exists with simple boxes (= (40)). A point can be imposed, licensing a measurable direct object. With perfectives there already is a distinguished point, typically playing a different role.

As it stands, our theory makes an additional prediction which we should check. Recall (from Test 1, and from section 1.7) that perfective nonpast verbs are shifted into the future. If we were to find perfective nonfutures one would expect a shift to the past. K.Hale (personal communication) points out that Papago may provide a test case. Consulting Alvarez (1969), we can set up the following tense-aspect table for Papago:

57. I should point out that "być"-passives tolerate aspect disagreement. Likewise in colloquial constructions of the type "mam pokój P0sprzątany" (I have cleaned the room), "mam" (I have) is imperfective while "P0sprzątać" is perfective (and in fact necessarily so). If cases of apparent aspect disagreement can be analysed as adjectival complementation, then the problem disappears: The adjectival forms can be taken to be stative (and so imperfective); "mieć" (to have) and "być" (to be) are of course imperfective too.

58. There are in addition prefixal usages that specifically license durational objects (e.g. "P0stać tam 2 godziny" = 'I stood there for 2 hours'). Nothing said so far rules this out, which means in effect that this situation is to be expected.
(78)

IMPERFECTIVE

future
a. Huan 'at o meând.
   John AUX FUT run.IMPF,FUT
   'John will be running.'

nonfuture
b. Huan 'o meń.
   John AUX run.IMPF
   'John is running.'

PERFECTIVE

future
c. Huan 'at o mejí.
   John AUX FUT run.PF
   'John will run / start running.'

nonfuture
d. Huan 'at meí.
   John AUX run.PF
   'John ran' (= he did all his running)
   'John is running' (= he has started running)

Alvarez refers to the nonfuture as "hemukam" (now-ish) or "heki-huëkam" (already-ish); the future he calls "pi-koikam" (not-yet-ish). The imperfective is characterised as "s-'ëdam-'i-cekakam" (being in the middle stage of a process or action), while the perfective denotes either "'i-kuïgkam" (ending) or "'i-sonwuakam" (starting). Thus our familiar exit-entrance duality crops up once again. Bearing it in mind, one can see that (78d) (the perfective nonfuture) is glossable in either of two ways: The exit (termination) can be shifted into the past (he did all his running), or the entrance can be (he has started running). Thus the theory is

59. An adverbial can force (78b) into the past.
In the next chapter I shall examine further data from Slavic. That done, I will summarise the proposed theory of aspect and consider some of its implications.

60. Shi (1990) presents data showing that the Chinese particle "le" exhibits exit-entrance duality:

(i) Zhāngsān chī le yī kuài niúròu.  
John eat LE one chunk beef  
'John ate a piece of beef.'

(ii) Zhāngsān chī niúròu le.  
John eat beef LE  
'John NOW eats beef. (He didn't used to.)'

(iii) Zhāngsān qu niúyǔ le.  
John go New York LE  
'John went to New York.'

(iv) Zhāngsān yǒu le yī dà bǐ qián.  
John has LE one big sum money  
'John now has a big sum of money.'

All these sentences are shifted to the past: In the odd-numbered ones the exit (ending) occurs in the past; in the others the entrance does.
The system of aspectual representation I have proposed (based on Slavic, and justified by extra-Slavic applications) was explicitly constructed to account for two verbal paradigms in Polish. On the one hand it can straightforwardly handle what I have referred to as the massive 'basic' paradigm - that with which my discussion began (section 1.1). However it also sheds light on a much smaller and slightly more exotic set of facts pertaining to the so-called 'verbs of motion' (section 1.4). My present goal is to examine two other rather circumscribed types of verbal aspect 'paradigms' in Polish. Prima facie they exhibit properties which could be construed as wildly violating the very tight theory I have advocated - this makes the situation interesting. Either we will see where the theory breaks down and how it needs to be modified, or the theory will hold up and actually explicate the apparent violations of otherwise well-supported generalisations.
2.1 THE DOUBLE ASPECT PHENOMENON

Given the notation developed so far, all our explanations crucially hinge on the distinction between boxes and points, i.e. between boxlike behaviour and pointlike behaviour. Accordingly, Slavic morphology splits verbs up into two classes: imperfectives and perfectives, respectively (section 1.5). In English (and in similar languages) this distinction was shown to be important too, for example in accounting for the possibilities of occurrence of various verbal forms (like progressives and 'simple' tenses - see section 1.8). There is however a corner of Polish where the perfective-imperfective dichotomy seems to break down. The lexical items involved are what we might call 'DOUBLE ASPECT' verbs.

Virtually every linguist investigating Polish aspect mentions the 'double aspect' phenomenon, quite typically only in passing. It is standard to label the phenomenon 'rare', to give a few examples, and essentially to dismiss it. A comprehensive grammar will mention it essentially for the sake of completeness rather than for any aspectological insights that it offers. Since however I have proposed an explicit theory grounded on the claim that grammars treat perfectives and imperfectives as fundamentally different objects, it is important to see whether the overall number of 'double aspect' verbs and (more significantly) their properties constitute a direct

1. "Un très petit nombre de verbes" to quote Grappin (1942).
challenge to my hypothesis. Needless to say, one can always propose a
dual mode of lexical representation for some verbs (the fewer the
better), but the basic question is whether such a move seriously
weakens the theory. In a nutshell, if 'double aspecthood' is nothing
but a complication, why should a grammar sanction it in the first
place?

'Double aspect' verbs fall into at least two broad classes. As
alluded to above, no one I know of claims to provide an exhaustive
list. (I suspect that this is significant in itself, as we shall
shortly see.) I begin therefore with all the examples I have found
belonging to the larger of the two classes. It consists entirely of
borrowings, and so is the only one that is at least potentially
open-ended.

(1) abdykować (to abdicate)
    abrogować (to abrogate)
    akredytować (to accredit)
    amnestionować (to amnesty)
    aresztować (to arrest)
    deklarować (to declare)
    ekshumować (to exhume)
    eksportować (to export)
    ekstrapolować (to extrapolate)
    emigrować (to emigrate)
    emitować (to emit/put into circulation)
    ewakuować (to evacuate)
    imigrować (to immigrate)
    importować (to import)
    inscenizować (to stage)
    internować (to detain)
    intronizować (to enthrone)
    izolować (to isolate)
    ofiarować (to offer)
    okupować (to occupy)
    optować (to opt for)
    postdatować (to post-date)
    ratyfikować (to ratify)
    rewindykować (to repossess)
What is notable about this set is that each member either clearly has or can be construed as having a (Latin or other) prefix: e.g. a/ab-, de-, e/ex-, etc. This can hardly be an accident. It would appear then that the items in (1) can be treated in two ways, as follows. A liberal interpretation of the foreign prefix allows it to count as a mark of perfectivity. On a more conservative interpretation, however, either the prefix is not seen (i.e. analysed as a prefix), or it is seen and patently does not fall into the present-day set of Polish aspectual prefixes - this implies that the verb is unprefixed for aspectual purposes and so is imperfective. The overall consequence of course is double aspect behaviour, and it is not entirely unmotivated.

The reader will recall that the treatment accorded to the verbs in (1) is certainly not the manner in which the vast majority of borrowings are handled in Polish. As illustrated previously (section 1.1), directly borrowed verbs are standardly taken to be imperfective (regardless of their structure in the original language). Perfectivisation then requires the addition of one of the specifically aspectual prefixes of Polish listed in the table in (4) of chapter 1. In fact the latter observation is one of my main pieces of evidence for the synchronic productivity of Polish perfectivisation. This is particularly striking with perfectives like "PRZEtransportować" (to transport), where both Polish and Latin prefixes appear. To recapitulate, "transportować"/"PRZEtransportować" is the rule; (1) is the exception.
I should point out that like much of the twentieth century world Polish has borrowed a significant number of verbs from English. Examples abound in both sports and technical vocabularies. Some examples:

(2) blokować (to block)  
bombardować (to bomb)  
bankrutować (to go bankrupt)  
nokautować (to K.O.)  
parkować (to park)  
serwować (to serve)  
stopować (to stop)  
strajkować (to go on strike)  

All verbs in (2) are necessarily imperfective. As we would expect, the corresponding perfectives all bear an appropriately chosen prefix:

(3) Zablokować  
Zbombardować  
Zbankrutować  
Znokautować  
Zaparkować  
Zaserwować  
Zastopować  
ZAstrajkować  

The pattern of behaviour shown in (2),(3) is perfectly general for all non-Latinate borrowings. The approach I have outlined predicts this state of affairs: Since borrowings from languages like (non-Latinate) English typically exhibit no (English) prefix, there is no opportunity for a foreign prefix to be construed as an honorary equivalent of a Polish perfectiviser. Hence imperfectivity in (2), and consequently no 'double aspecthood'.

All the same, from what I have said up to this point there is no way
of predicting the existence of an apparent tension (cf. (1)) between the straightforward imperfective analysis of Latinate borrowings and the double aspect analysis. I repeat that the former pattern predominates: Not only English borrowings, but literally hundreds of verbs WITH LATIN PREFIXES are assimilated into Polish without aspect doubling. My theory certainly accounts for the direction of this trend; the question we now face is why it is not absolute.

To resolve this issue it is worth examining the verbs in (1) in more detail. One striking fact about this collection of verbs is that they virtually all belong specifically to a domain of discourse we might call legalistic-diplomatese. This is obvious in the case of examples like "abdykować", "amnestionować", or "ratyfikować", and fairly clear for verbs such as "eksportować" or "imigrować" (where transnational considerations are uppermost). Note moreover that "optować" refers basically to opting for one country or another in questions of citizenship, while "deklarować" is used primarily of official declarations (e.g. the declaration of the holding of an election). It is reasonable to suppose that in circles where such jargon is standard at least superficial or passing acquaintance with Latin can be presupposed.²

Interestingly, many of the verbs in (1) can be (and often are)

². For those not familiar with Polish culture the last sentence may need some justification. In this connection I should point out that frequent users of most of the terminology in (1) are well acquainted with such terms as "liberum veto", "interregnum", "habeas corpus", etc. All these words have a legal flavour.
perfectivised by prefixes in the standard way. Thus one finds:

(4)  
emigrować  WYemigrować  
eksportować  WYeksportować  
ingscenizować ZAinscenizować  
deklarować  ZAdeklarować  
    Zdeklarować się  
aresztować  ZAaresztować  

Apparently the less a verb is construed as specifically legal-diplomatic, the more it exhibits normal (i.e. non-double-aspect) behaviour.

This leads me to the next point: Not all the verbs in (1) can be construed as having perfective aspect equally easily. I for example personally find a fairly clear contrast between "eksportować" and "aresztować" in this regard, with the former preferring "WYeksportować" in the perfective. "Aresztować" on the other hand clearly passes Test 6. (Many of the verbs in (1) can be shown to be perfective only via Test 1 and/or 3, and as noted earlier interpreting the results of Test 1 needs some degree of judgment and care.) This overall uneven degree of double-aspecthood makes its presence felt when comparing different dictionaries and different authors. The list in (1) is based on the three volume Szymczak dictionary (Słownik języka polskiego: SJP). Of all these verbs the only ones explicitly marked 'vip' (Verb, both Imperfective and Perfective) in Bulas, Thomas and Whitfield's Polish-English dictionary are "abdykować",

3. Curiously, the 3 volume Szymczak dictionary does not give this form; it does appear in Stanisławski et al. though. In part this reflects a learned/not-so-learned division in the vocabulary.
"amnestiowanać", and "ofiarować". Grzegorczykowa, Laskowski and Wróbel (1984) give only four examples followed by "itp." = 'etc.': "abdykować", "importować", "impregnować", and "aprobować". The last two are not marked for double aspecthood by Szymczak (hence their absence from (1)), although with sufficient effort I can construe them as perfectives (while nonetheless preferring "ZAaprobować" = 'approve', which Szymczak gives). I suspect this fluidity is what is behind the general reluctance of various people to provide putatively exhaustive lists of 'double aspect' verbs.

The key lesson to be learnt from the foregoing is that when a foreign verb is assimilated into the Polish language, it can always be taken to be imperfective. Further, in some instances, a perfective analysis can be forced upon it, with more or less effort. The latter process, I hypothesise, has nothing to do with aspect per se, but should rather be viewed as a by-product of how the human language faculty handles morphology. In particular, I claim that under certain circumstances morphological structure can be IMPOSED on a word. For Polish this has the consequence of Latin prefixes like "ex-" or "in-" being treated as honorary aspectual prefixes (roughly equivalent to "WY" or "W", respectively). The challenge posed by 'double aspect' phenomena is that of a process which is relatively rare and stylistically marked on the one hand showing a strong PREFERENCE FOR

4. Not surprisingly, some of the verbs in (1) are not even listed (in this smaller dictionary); thus we don't find "intronizować", although "intronizacja" = 'enthronement' does occur.
REANALYSIS (into the (2)/(3) mould - note (4) in this regard), but on the other hand being ALLOWED TO EXIST and survive nonetheless. It is this tension that my proposal of imposed morphological structure is designed to capture.

One consequence of the above approach is that since morphological structure imposition and aspectual property assignment are essentially autonomous processes, we should expect to see the former at work independently of aspect and outside of Slavic. A good case can be made for morphological structure imposition in certain Spanish nouns. In recent research, J.W. Harris has presented a theory of 'gender' in Spanish which crucially relies upon a separation of semantics (male/femaleness), syntax (the presence or absence of the feature [f]), morphology (with 'word markers' [A', [E']), and phonetics/phonology (which realises the 'word markers' in articulatory terms). The theory is designed to handle not only core pairs of the "muchacha"-"muchacho" ('girl'-'boy') variety, but also an outer core (e.g. "padre", "madre"), as well as a periphery of special cases.

One can outline the approach basically as follows: The existence of 'word markers' (morphemes marking the ends of words) is central, and their relation to gender is taken to be real but indirect. They surface in the form (V)(s), where V = vowel. For my purposes what is interesting is the tiny class of words comprising "tribu" ('tribe'; feminine) and "espíritu" ('spirit'; masculine). They belong to Harriş's periphery. In a sense they are clearly allowed to exist, but they also exhibit a strong tendency towards reanalysis, into "triba" and "espírito" respectively. This follows naturally once we assume
that final "-u" is an entity that is subject to morphological structure imposition: It has the shape of a word marker, although morphologically it is neither ]A nor ]E; further it can be construed as an archaic Latinate word marker (via Latin "-us"). In this way, 'core-versus-periphery' can be shown not to be a primitive ingredient in a theory of Spanish gender, but rather the result of that theory interacting with independent morphological processes. In particular, the process of structure imposition induces rarity and a tendency towards reanalysis by its very nature (as seen in the Polish data).

One might object that Polish and Spanish are not really parallel here given that the nature of the reanalysis is somewhat different in each case. Thus in Polish one finds "WYeksportować" and not "*WYportować", while in Spanish one hears "triba" but not "*tribua". This objection need not be as serious as at first appears. Clearly Spanish "-u" has the phonological shape of a word marker: (V)(s). "Tribu" can thus be construed as a noun bearing the 'wrong' marker, and since only one marker per word is allowed (by definition), and since the word is feminine, we get "triba". The prefix in "eksportować" however does not have the shape of any of the Polish aspectual prefixes (see table (4) of chapter 1). Perfective "eksportować" will then not be construed as having the 'wrong' aspectual prefix but as having none at all - hence "WYeksportować".

A brief digression will provide independent motivation for this interpretation. A number of short articles in the Polish philological
journals\(^5\) have discussed what might be called 'double plurals':

(5) plural singular

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<tbody>
<tr>
<td>Hindus</td>
<td>Hindu</td>
<td>(Indian/Hindu)</td>
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<tr>
<td>Eskimos</td>
<td>Eskimos</td>
<td>(Eskimo)</td>
<td></td>
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<tr>
<td>Jankesi</td>
<td>Jankes</td>
<td>(Yankee)</td>
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</tr>
<tr>
<td>girlsy</td>
<td>girlsa</td>
<td>(showgirl)</td>
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<tr>
<td>komandosi</td>
<td>komandos</td>
<td>(commando)</td>
<td></td>
</tr>
<tr>
<td>pensy</td>
<td>pens</td>
<td>(penny)</td>
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A plausible account is that Polish borrowed the English plurals ('Hindus', 'Eskimos', 'Yankees', 'girls', 'commandos', 'pence' - note the irregular plural here), but nonetheless added Polish plurality markers\(^6\) given that '-s' does not signal plural number in Slavic. Subsequently, plural "Hindusi" yielded singular "Hindus". Thus a word like "girlsy" has both a foreign and a native plural marker just as "WYeksportować" has both a native and a foreign prefix - in either case only the presence of the native morpheme is 'felt'. This accounts for the singular "girls" (note the 's').

A similar sort of effect can be encountered in the treatment of words with foreign Case markers:

(6) nominative genitive 'locative'

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<tr>
<td>sinus</td>
<td>(sine)</td>
<td>sinusa</td>
<td>sinusie</td>
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<tr>
<td>[cf: pan (mister)]</td>
<td>pana</td>
<td>panie</td>
<td></td>
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<tr>
<td>Petroniusz (Petronius)</td>
<td>Petroniusza</td>
<td>Petroniuszu</td>
<td></td>
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<tr>
<td>geniusz (genius)</td>
<td>geniusza</td>
<td>geniuszu</td>
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6. Note that Plurality is fused with Case here, all the cited examples being Nominative. The native plural marker can be seen in "Polak - Polacy" (Pole - Poles); "Litwin - Litwini" (Lithuanian(s)); etc.
The presence of the Latin Case marker "-us" is simply not 'felt', and so is preserved in non-nominative forms. Here however we can find a neat set of exceptions which literally prove the rule. Consider the Latinate names of the grammatical Cases:

(7) nominative  genitive  'locative'

nominativus ('nom.')  nominatiwu  nominatiwic
genetivus ('gen.')  genetiwu  genetiwic
datitivus ('dat.')  datiwu  datiwic
etc.

This pattern is restricted SOLELY to grammatical terminology. Only grammarians 'feel' the "-us" of "nominativus" as a nominative Case marker, as well they should. Forms like "nominatiwic" or "datiwic" are then a more exact analogue to Spanish "triba". Note that once again we are dealing with a restricted domain of discourse, not diplomatic legalese this time but grammatical terminology.

In a final aside I point out that the Latin 'feminine' nominative marker "-a" is assimilated directly to the Polish 'feminine' nominative marker of the same shape:

(8) nominative  genitive  'locatifs'

gramatyka (grammar)  gramatyki  gramatyce
[cf. matka (mother)]  matki  matcex
biologia (biology)  biologii  biologii
Australia  Australii  Australii
Polonia  Polonii  Polonii

7. The native names are "mianownik", "dopełniacz", and "celownik", respectively.
We do not find anything resembling "*gramatykai" for exactly the same reason that "*tribua" does not exist. I conclude that Polish and Spanish should be viewed as quite parallel.

One might well ask what intrinsic role the process of morphological structure imposition plays within the human language faculty. Some light on this question may be shed by data on stress in Warlpiri provided to me by K. Hale (personal communication). Hale points out that Warlpiri places stress on the initial syllable of a word. When a word is too long (over three syllables in length), it is subdivided into constituents, the first syllable of each of which is stressed (main stress falls on the first of these). The smaller constituents arise either by standard morphological processes, or through morphological structure imposition. The fact that such structure is imposed can be established from the possibility of alternative stress patterns on five-syllable words in which factors like etymologising or reduplication fail to provide a single most natural imposed constituent structure. Thus we find:

(9) 'blowfly' / \ murrungulkuru (via CVCV-CVCVCV)
    / \ murrungulkuru (via CVCVCV-CVCV)

I would further like to claim that the distinction between lexical items with imposed structure and those without it can provide a grammar with a natural way of partitioning the lexicon, should such partitioning be needed. In English it appears to be, given the existence of a Latinate and a non-Latinate vocabulary with rather
different phonological properties (e.g. velar softening). Structure imposition may enable us to dispense with a purely diacritic feature such as [⁺ Latinate].

The hypothesis that the Latinate structure of English words is imposed can be supported by patterns of stress variation, not totally unlike those found in Warlpiri. Consider adjectives such as 'temporal', 'pastoral', and 'electoral'. In standard American speech the antepenultimate syllable is stressed. However not infrequently one hears penultimate stress instead. I propose the following account. The standard American phonological analysis operates on imposed structures such as [[past]oral]. These yield derived (i.e. suffixed) adjectives, hence antepenultimate stress. If however this kind of structure is not imposed (as in Polish "WYeksportować", or "Petroniusza") one has an underived adjective and consequently penultimate stress. One may well wonder how morphological structure can fail to be imposed upon the adjectives under consideration. For 'temporal' this is actually not unnatural, given that there are no '*tempors'. 'Pastoral' on the other hand basically has very little to do with pastors. As for 'electoral', notice that this adjective

8. My (Australian) English also exhibits penultimate stress, but for an irrelevant reason; for me the words have 2, 2, and 3 surface syllables respectively.

9. Chomsky and Halle (1968) give the following paradigm for verbs and underived adjectives: fínish, conclúde; shállow, obése. Either the final or penultimate syllable is stressed, depending ultimately (as discussed in subsequent work) on syllable structure. For us, the penultimate pattern is the relevant one.
pertains to people who would refer to themselves as voters and not as electors.  

I would like to close this discussion of morphological structure imposition by returning to aspectual considerations. The reader will recall (section 1.7) that Georgian possesses an aspectual prefix system in some ways quite like that of Slavic. Moreover, it is noteworthy that apart from the standard prefix set of modern Georgian, the language also has a number of verbs bearing Old Georgian prefixes. Aronson (1982:42) refers to these as "'higher style' words, words somewhat equivalent to the latinate vocabulary in English.

Vogt (1971:183) writes as follows:

Il s'agit de mots savants pris au v.xg. [= vieux géorgien], ce qui souvent se révèle par la forme même du préverbe, p.ex. "štaagonebs" il l'inspire,
"ganagebs" il l'administre,
"ganagr3obs" il le continue,
"šeadgens" il le constitue,
"c'arloadhgens" il le représente,
"gamo(s)tkvams" il le prononce,
"c'armartavs" il le dirige,
"ganmart'avs" il l'explique,
"aŋnišnava" il le signifie,
"gamoricxavas" il l'exclut,
"gansazyravas" il le définit,
"ganasxvavebs" il les rend différents,
"aŋikvams" il le perçoit,
"aŋašpotebs" il l'excite,
"šeivvas" il le contient,
"ganicdis" il l'éprouve,

--------------------

10. Interestingly, I have no recollection of ever hearing 'doctoral' or 'spatio-temporal' with American-style penultimate stress. This may well be no accident. I conjecture that 'doctoral' is too transparently related to 'doctor' (of the Ph.D. variety), while 'spatio-temporal' virtually wears its morphological decomposition on its sleeve.
"gamocems" il le publie,
"alravs" il le met en mouvement,
"al'ers" il le décrit,
"ganixilavs" il l'examine.
Toutes ces formes peuvent aussi avoir le sens futur.

(It is a question of learned words taken from Old
Georgian, something which often reveals itself via
the very form of the prefix, for example (...)
All these forms can also have future meaning.)

Given that aspectual prefixes normally induce futurity in Georgian (in
the nonpast), what we seem to have here is a kind of 'double aspect'
behaviour. I would like to claim that it should be given the same
analysis as that proposed for the Polish verbs in (1).

When discussing Polish prefixation I mentioned that only aspectual
prefixes (those listed in (4) of chapter 1) count for purposes of
perfectivisation. I gave one example of a verbal prefix (negative
"nie") which is aspectually irrelevant, as can be seen from such
multiprefixed forms as "ZAnieczyścić" (to pollute) or "ZAaniemówić" (to
be struck dumbfounded)11. Another such prefix, "współ", indicates
co-operative activity (approximately like 'co-'). That this prefix is
not a perfectiviser can be established in two ways. On the one hand
it basically leaves imperfective stems with imperfective aspect:

(10) wspóIPracować (to work together; to co-operate)
cf. pracować (to work)
współistnieć (to co-exist)
cf. istnieć (to exist)
współczuć (to sympathise)
cf. czuć (to feel)

11. Cf. "czysćić" (to clean); "mówić" (to speak).
współorganizować (to co-organise)
cf. organizować (to organise)

współredagować (to co-edit)
cf. redagować (to edit)

współżyć (to live together)
cf. żyć (to live)

An imperfective like "współWYstępować" (to co-occur) shows us that "współ" can latch onto even secondary imperfectives, and as before it does not alter the imperfectivity of the base. Secondly, there is no Polish preposition that corresponds to "współ". We do find an archaic related adverbial "wespół" (as in "wespół z kolegami" = 'together with (one's) colleagues'), but here the true preposition "z" = 'with' must appear. Overall then we would expect "współ" to fall outside the Polish aspectual system. What is interesting for our purposes is that occasionally perfective aspect can be forced onto "współ"-verbs. Thus speakers of Polish will to some extent accept a few participles of the form "współredagowawszy". This indicates by Test 4 that "współredagować" has been forced into the perfective aspect. Moreover it is somewhat peculiar that the Szymczak dictionary, while listing virtually all "współ" verbs as imperfective, classifies four as perfective: "współrządzić" (to co-administer), "współtworzyć" (to co-create), "współtowarzyszyć" (to co-accompany), and "współuczestniczyć" (to co-participate). To my ear these four verbs all pass standard tests for imperfectivity (e.g. Test 1), and in fact seem to prefer an imperfective construal. Accordingly I interpret the dictionary entries as forced perfectives - that is perfectives created by virtue of imposed morphological structure licensing an honorary
aspectual prefix.

There is however a second, rather tiny class of Polish 'double aspect' verbs that apparently resists this analysis. None of the verbs in question are either Latinate or prefixed. Since their characteristics are not uniform, I examine various sub-cases in turn.

A verb listed in dictionaries as a 'double aspect' verb may in actuality correspond to two homophonous lexical entries very close in meaning. I suspect that this is the situation with "potrafić". As an imperfective it means 'to be able to or know how to do something' (and so roughly corresponds to "umieć"). The perfective "potrafić" is rather more aptly translated as 'to manage' (and has no "umieć" counterpart). The two meanings are close, but separable. Given this, the double aspecthood of "potrafić" is merely illusory. Something like this may also be going on with "ofiarować" (listed in (1), glossed as 'to offer'). In the modern language this verb seems to be acquiring a specialised meaning 'to make a bid or an offer', with perfective aspect. Homophonomous to it is a more general imperfective meaning 'to offer or sacrifice'; correspondingly we find perfective "ZAofiarować".

A rather curious situation arises with "ranić" = 'to wound'. The verb is standardly imperfective, but it can with some effort (especially in literary contexts) be forced to be perfective. Note that the expected perfective counterpart to "ranić", namely "Zranić", certainly exists. What seems to be going on here is that the prefix "Z", with its interpretation of measuring out the object, is inducing
a kind of total affectedness. Yet one can imagine situations in which one speaks of wounding (rather than say killing) precisely in order to convey a notion of partial affectedness. Hence the peculiar status of perfective "ranić" - what is meant is "Zranić" but the prefix is left off in order to signify the (partial) extent of the injury.

It appears to me that "kanonizować" ('to canonise'; also a double aspect verb - this time from Latin, but unprefixed) partakes of something like the same logic. In this case there simply is no appropriate aspectual prefix. Whatever prefix might be chosen, it would convey the idea of the canoniser (the Pope) affecting and exerting some degree of control over the canonisee (the saint). But this borders on the heretical, if not the inconceivable. Hence "kanonizować" when used as a perfective has its prefix omitted, and in some sense this omission is meant to be 'felt'.

Finally we have the verb "kazać" (to order), as well as "pasować" (but only in the sense of 'to dub', and not in its other senses, e.g. 'to fit'), "mianować" (to name, nominate) and "ślubować" (in the sense of 'to swear an oath'). The factor responsible for 'double aspecthood' here appears to be the speech act character of the verbs in question. It is well-known the speech-act verbs can exhibit non-typical behaviour - for instance in English they can occur as non-statives in the 'simple' present tense without any hint of frequentativity or habituality.
This exhausts the double aspect phenomenon in Polish. If 'double aspect' verbs could be coined freely, any theory based on a perfective-imperfective dichotomy would be in some trouble. We have seen that this is not the case in Polish. Our aspectual theory has no intrinsic way of handling 'double aspecthood'. Consequently it predicts that when this phenomenon or something that looks like it is found, other factors must be playing a role. Fortunately we have been able to isolate such factors (e.g. morphological structure imposition, or the very occasional homophony) and adduce independent evidence for them. It is because of the success of this prediction (rather than mere considerations of markedness or rarity) that I claim that 'double aspecthood' does not challenge my theory; if anything it indirectly supports it.

The answer then to the question of whether our theory would be simpler if no 'double aspect' verbs existed is yes, but only in a trivial sense. The theory of aspect would not be simplified, as 'double aspecthood' does not fall under that theory. Rather it arises from the interaction of principles that are motivated outside of Slavic, and so are attributable to UG. If Polish were not to use a certain option provided by UG, the grammar would be 'simpler', but

12. Incidentally, Netteberg (1953) also lists "trafić" (to make it) and "raczyć" (to deign) as double aspect verbs. For me, and in dictionaries I have consulted, the former is perfective tout court and the latter imperfective (though it may have a speech act use). Grappin (1942) gives "darować" (faire don) and "koronować" (couronner) as biaaspectual. Szymczak gives the former as perfective and the latter as imperfective, although it could be that in older Polish "koronować" behaved along the lines sketched for "kanonizować".

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since that option would always be available the apparent gain in simplicity is merely accidental and so in a sense illusory. The logic here is ultimately that of Chomsky (1981:4,6): A theory with several constituent modules (each relatively simple by itself) can appear to have complexities by virtue of their interaction.

2.2 INHERENT PERFECTIVITY

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When presenting the fundamental generalisation about multi-prefixation and perfectivity in Polish (see (10) in chapter 1) - a generalisation which incidentally is not to be seen as a primitive or law, but rather as a consequence of our theory - I used the phrase 'at most one prefix' rather than 'exactly one'. Up to this point, the option of zero (as opposed to one) prefix has done no real work for us. Even among the bulk of the so-called 'double aspect' verbs discussed in the previous section, the absence of a native aspectual prefix was compensated for by the imposition of aspectual status in an honorary capacity on a non-native morpheme. There is however a class of Polish verbs that are perfective and yet bear no prefix at all. It is to this class that I now turn.

The verbs under consideration will be called INHERENT perfectives, where 'inherent' should be read simply as 'unprefixed' 13 (and not as

13. Or more exactly as un-'aspectually prefixed' - an obviously clumsy term, hence my use of 'inherent'.
something like absolute incompatibility with imperfective aspect).

Putting aside for the moment the large set of Polish verbs with what is called the semelfactive suffix, we can list the members of our class as follows:

\[(11)\]  
\[
\begin{array}{ll}
dać & \text{(to give)} \\
kupić & \text{(to buy)} \\
rzucić & \text{(to throw)} \\
puścić & \text{(to drop; release)} \\
chwycić & \text{(to grab)} \\
skoczyć & \text{(to jump)} \\
wrócić & \text{(to return)} \\
chybić & \text{(to miss (a target))} \\
trafić & \text{(to make it (e.g. to a target))} \\
strzelić & \text{(to shoot)} \\
trącić & \text{(to knock, nudge)} \\
siąść & \text{(to sit down)} \\
ruszyć & \text{(to move, touch, put into motion)} \\
stawić się & \text{(to present oneself)} \\
\end{array}
\]

Although no prefix appears, a verb like "kupić" passes all the tests for perfectivity. (12) a – g correspond to Tests 1 – 7 respectively:

\[(12)\]  
\[
\begin{array}{c}
a. \quad \text{KUPIĘ nowe auto.} \\
\quad \text{(I WILL buy a new car.)} \\
b. \quad * \quad \text{BĘDĘ kupić nowe auto.} \\
\quad \text{(I will buy a new car.)} \\
c. \quad \text{GDY kupiłem nowe auto, była zadowolona.} \\
\quad \text{when} \\
\quad \text{(Once I bought a new car she was pleased.)} \\
d. \quad \text{KUPIWSZY nowe auto, byłem zadowolony.} \\
\quad \text{(I was pleased once I bought my new car.)}
\end{array}
\]

\[---\]

14. There are in addition two archaic verbs: "lec" (to die (e.g. in battle)) and "rzec" (to say). "Lec" has an equally archaic suffixal alternant: "legnąć".
e. * Przestałem kupić auta.
   (I stopped buying cars.)

f. Auto to zostało kupione w tym tygodniu.
   (This car was bought this week.)

g. * Kupiłem nowe auto dwa tygodnie.
   (The process of buying the new car took two weeks.)

There can be no doubt - and in fact there is universal consensus among linguists - that a verb like "kupić" is perfective (and indeed only perfective) despite not the slightest trace of a prefix. Furthermore, no effort is required to force perfectivity onto a verb like "kupić"; nor does it belong to some arcane domain of discourse. In fact most of the verbs in (11) are quite common.

A further indication of perfectivity comes from the existence of imperfective correspondents to each of the verbs in (11) - these are typically formed by suffixal change:

(13) dawać (to give - imperfective)
    kupować (to buy "
    rzucać (to throw"
    puszczać (to drop"
    chwytać (to grab"
    skakać (to jump"
    wracać (to return"
    chybiać (to miss"
    trafiać (to make it"
    strzelać (to shoot"
    trącać (to knock"
    siadać (to sit down"
    ruszać (to move"
    stawiać się (to present oneself"

---

15. Note the vowel "a" before the infinitival morpheme "ć".
As is to be expected, a verb like "kupować" passes all the tests for imperfectivity; again a - g correspond to Tests 1 - 7:

(14)

a. Kupuję nowe auto.
(I AM BUYING a new car.)

b. Będę kupować auto.
(I will buy a car.)

c. Gdy kupowałem nowe auto była zadowolona.
   when
(While I was buying the new car she was happy.)

d. Kupując nowe auto byłem zadowolony.
   (I was pleased when buying the new car.)

e. Przestałem kupować auto.
   (I stopped buying cars.)

f. * Auto to zostało kupowane w zeszłym tygodniu.
   (This car was bought last week.)

g. Kupowałem to auto dwa tygodnie.
   (The process of buying that car took two weeks.)

The question immediately arises how our theory can handle inherently perfective verbs and their properties.

There is a kind of obvious answer to this problem, and it can be shown moreover that it is untenable. The sentences in (12) demonstrate that inherent perfectives must be mapped to the time line pointwise. This would seem to mandate the aspectual representation below:

(15) [ ]

Now since the distinguished point in (15) must be licensed, and since
a verb like "kupić" must bear lexical aspectual properties
differentiating it from a verb such as "jeść", one might propose that
the structure in (15) is associated with all inherent perfectives in
the lexicon. (Recall that "jeść" at this level is just a box.) One
might then claim that the point in (15) is sanctioned by the lexical
content of the verb itself - after all at least for English we had
reason to propose the existence of lexical distinguished points.

If we were to take this approach, a major problem would immediately
arise. Given my system of handling multi-prefixation, we have an
immediate prediction: viz. the only aspectual prefixes that should
occur with inherent perfectives should be distributive "PO" and
accumulative "NA". This prediction is (at least prima facie) flat out
false. Consider the following 'ata:

(16)  rzucić  (to throw)
      WYrzucić  (to throw out)
      Wrzucić  (to throw into some container)
      ODrzucić  (to cast aside)
      ODOrzucić  (to add by throwing)
      Zrzucić  (to throw down)
      ZArzucić  (to throw over (one's shoulders))

      skoczyć  (to jump)
      WYskoczyć  (to jump out)
      Wskoczyć  (to jump in)
      ODskoczyć  (to quickly move away)
      ZEskokczyć  (to jump down)

      kupić  (to buy)
      WYkapić  (to buy all of)
      ODkapić  (to buy from one who himself has bought)
      DOKapić  (to buy something in addition)

One might in desperation appeal to some kind of lexical reanalysis,
whereby all the verbs in (16) are actually distinct lexical items,
each one inherently perfective. Such a move actually makes sense for
a few verbs such as "sprzedąć" = 'to sell' (discussed previously in
section 1.2), or "wydać" = 'to spend' (only when used of money).16
However there is not a shred of independent evidence for the claim
that "DOrzucić" for instance is not as intimately related to "rzucić"
as, say, "DOnećtać" is to "Onećtać". In fact we would be losing a
significant linguistic generalisation merely to save a hypothesised
theory.

I have another reason for being sceptical of the lexical reanalysis
move sketched in the preceding paragraph. As already mentioned, the
phenomenon of a perfectivity-imperfectivity contrast is certainly not
unique to Polish or to Slavic. Nor it seems is the existence of
inherently perfective verbs unique to Slavic. Thus in Finnish, where
the distinction between partitive and non-partitive Case can encode
aspect (imperfectivity and perfectivity, respectively), Kangasmaa-Minn
(1984:84-5) reports the following judgments:

(17)
a. * Annan lahja.
   I-give present-PART.
   (I am giving a present.)

b. Annan lahjan.
   I-give present-ACC.
   (I am giving a present.)

c. Annan lahjat.
   I-give presents-ACC(NOM)
   (I give the presents.)

-------

16. As opposed to the more abstract sense of "WYdać" = 'to give away'.

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d. Annan lahjoja.
I-give presents-PART.
(I shall give some presents;
I am giving presents;
I am in the habit of giving presents.)

The impossibility of (17a) is attributed by Kangasmää-Minn to the fact that "'Antaa' is an inherently perfective verb, i.e. it cannot occur together with an indivisible partitive." Is it a coincidence that the verb 'to give' also appears in (11), our list of Polish inherent perfectives? Karlsson (1983) seems to indicate the perfectivity of 'to buy' in Finnish as well.

Verbs like 'to give' and 'to buy' are well-known to be special in English, where they license the 'dative alternation':

(18) a. I gave a book to the professor.
   b. I gave the professor a book.

In fact, the extent to which the verbs in (11) correlate with the verbs that sanction dative alternation in English looks non-accidental. Certainly the English translations of the list in (11) do not yield solely double-object verbs. Nor does every type of English double-object verb have a correspondent in (11)\textsuperscript{17}. However it seems fair to say that every verb in (11) which can take at least three arguments one of which is an intentional agent yields a double object verb when translated into English. Moreover, as mentioned above, Polish has a number of additional 'honorary' members of (11),

\textsuperscript{17} E.g. 'To bake' as in 'I baked him a cake' corresponds to Polish "piec", which is imperfective.
such as "sprzędać" (to sell) or "pożyczyć" (to lend): these verbs bear
prefixes that have lost their aspectual function\(^{18}\) - yet they are
still perfective and so are analysable as inherent perfectives. Not
surprisingly this class of verbs also correlates with English
double-objecthood.

The reader will recall that Georgian exhibits aspectual prefixation
phenomena not unlike those of Polish. Linguists studying Georgian
have also reported inherent perfectivity, and once again an affinity
with English double-objecthood is detectable. Thus Holisky (1981a)
lists the following nonpast forms, which due to their inherent
perfective aspect are to be read as in the future tense:

\[
\begin{align*}
(19) & \quad \text{ip'ovnis} & & \text{(find something)} \\
& \quad \text{itxovs} & & \text{(borrow something)} \\
& \quad \text{išovis} & & \text{(get something)} \\
& \quad \text{ik'isrebs} & & \text{(take something on)}
\end{align*}
\]

Vogt (1971:142) gives a slightly longer list:

\[
\begin{align*}
(20) & \quad \text{itxov} & & \text{(tu le demanderas)} \\
& \quad \text{ik'itxav} & & \text{(tu poseras une question)} \\
& \quad \text{ik'isreb} & & \text{(tu t'en chargeras)} \\
& \quad \text{ilocav} & & \text{(tu prieras)} \\
& \quad \text{indomeb} & & \text{(tu le voudras)} \\
& \quad \text{ip'ov(n)i} & & \text{(tu le trouveras)} \\
& \quad \text{išov(n)i} & & \text{(tu l'emprunteras)} \\
& \quad \text{isesxeb} & & \text{(tu le jettes/jetteras,}
\text{tu tire(r)as un coup de fusil)} \\
& \quad \text{isvri} & & \text{(tu l'achèteras)} \\
& \quad \text{iq'idi} & & \text{(tu l'achèteras)}
\end{align*}
\]

\[\text{---}\]

18. As can be deduced from the existence of "WYsprzędać" or
"WYpożyczyć".
In the face of a cross-linguistic tendency of this type, it would be most unfortunate if the class of verbs in (11) had to be analysed as one that is subject to massive idiosyncratic lexicalisation, rather than as a coherent group.

On the other hand, to weaken our current approach to multi-prefixation simply to account for (16) would also be an unsavoury move to make. There simply is no obvious way of relaxing the logic of the previous chapter without rendering our theory either stipulative or vacuous. We thus appear to be in a bind. Fortunately this is mere appearance.

The theory expounded in the previous chapter dictates that if "DOrzucić" is based on "rzucić", then "rzucić" cannot (simply) be what is shown in (15). The obvious question then is whether inherent perfectives like "rzucić" can be represented in any other way. Recall that the only machinery at our disposal is boxes, points and reduplication. A verb like "rzucić" cannot be a mere box - this would mean it was imperfective. Nor can it be a mere point - once we have a point the addition of "DO" (say) is ruled out. Certainly we have no reason to suppose that "rzucić" is some kind of aspectual complex (e.g. built by reduplication). As far as I can see this leaves us with exactly one option:

(21)

In the lexicon an inherent perfective like "rzucić" is aspectually zero - to use the terminology of phonological theory it is completely
underspecified. Clearly, zero cannot be meaningfully mapped to the time line. We must therefore ask whether our theory will enable us to build something like (15) starting from (21).

To go from (21) to (15) we need to introduce one box and one point. In earlier discussion we have already witnessed the appearance ex nihilo of a default outermost box (in order essentially to designate the entirety of that contained in it as a single predication). The emergence of a box then is no great problem. If however a default box can be introduced when necessary, why not a point? Nothing so far rules this out, and indeed one would need an extra stipulation to do so. Furthermore the emergent box and point can be seen as mutually licensing: The point arises to give the box something to contain, while the box emerges in order to contain the point. (Mutual licensing enables the point to appear in the absence (definitionally in the case of inherent perfectives) of its usual licenser (a perfectivising prefix); it further enables the operation of box-drawing to have a purpose (i.e. to actually contain something).)

In order to be maximally explicit, one can characterise mutual licensing as follows: X and Y stand in the relation of mutual licensing iff X licenses Y, and Y licenses X. To license something is to provide it with a(n aspectual) role.

One can use the same logic to account for the imperfectives in (13). Lexically these are zeros. Aspectually their behaviour is boxlike. They cannot be viewed as just a single box, since nothing would license its emergence. Instead I propose that the final
aspectual representation of a verb like "rzucad" should be:

(22) 

Parallel to (15), the inner box allows the emergence of the outer one, while the outer one sanctions the presence of the inner one. The role of big box is to contain; that of the small one is to be contained.

Summarising, my account of inherent perfectives is as follows: Both a verb like "rzucić" and its imperfective counterpart "rzucić" are stored in the lexicon as an aspectual zero. From it something must emerge if a verb is to be mapped to the time line. Two kinds of well-formed structures can spontaneously emerge: (15) and (22). The former is perfective and corresponds to "rzucić"; the latter is imperfective and so represents "rzucad".

I would like to claim that the above logic is implicit in the theory presented in the preceding chapter - just waiting to be discovered. Furthermore, it has a couple rather nice properties. For a start, the data in (16) are no longer problematic. The verb "rzucić" acquires its distinguished point by default emergence; in forms like "DOrzucić" however the aspectual prefix causes the appearance of a point in its usual way, and a default containing box appears in order to create an opportunity for this to occur. Crucially, "DOrzucić" (which is represented in the end as (15)) is built out of the LEXICAL representation of "rzucić" (i.e. (21)), and NOT out of the final full
aspectual structure of "rzucić" (= (15)). In this way the issue of adding a perfectivising prefix to an already perfective form never arises. Consequently our (derived) barrier against multi-prefixation can stand secure as ever.

If "DOrzucić" has the final aspectual structure shown in (15), then, by the logic of our theory, the corresponding secondary imperfective "DOrzućać" will necessarily be represented as follows:

(23) 

The pertinent derivation is the following:

\[
\emptyset \rightarrow \cdot \rightarrow \Box \rightarrow \Box
\]

zero (DO-) (DOrzucić) DOrzućać

Recall that (23) is identical to our notation for verbs like "Wykańczać" (cf. section 1.5). Notice further that both (22) and (23) consist of a box inside a box; morphologically "rzuać" and "DOrzućać" share a (suffixied\(^{19}\)) stem, and in this they contrast with "rzucić" and "DOrzucić" (both represented by (15)). Once again then a natural class has emerged - and as before the suffixed variants correlate with

\[^{19}\text{The reader's attention is drawn once more to the "a" before the "čn".}\]
box-inside-box aspectual structures. I might add that this morphological behaviour is exhibited not only by "rzucić" but by all the verbs in (11). This is exactly what we would predict.

I would now like to present independent motivation for my theory of inherent perfectives, and in particular for the hypothesis of aspectual zero status in the lexicon. The evidence comes from the remaining class of Polish inherent perfectives: those bearing the 'semelfactive' suffix "-nac"\textsuperscript{20}. A selection from the many dozens of such verbs is given below:

\begin{center}
\begin{tabular}{ll}
(24) & \textbf{perfective} & \textbf{imperfective} \\
krzyknac & (to shout) & krzeczy \\
szepnac & (to whisper) & szepcza \\
panac & (to swat) & \\
pisanac & (to squeal) & piszcze \\
szczyznac & (to pinch) & szczypac \\
chlupnac & (to splash) & chlupa \\
blysznac & (to flash) & blyaska, blyszcza \\
frunac & (to flutter) & fruwa \\
fundnac & (to pay for) & fundowa \\
\end{tabular}
\end{center}

It is a routine matter to demonstrate that all the verbs in the first column in (24), despite being prefixless, show all the earmarks of perfectivity. Note that "krzyknac" can be more transparently glossed as 'to give a shout' as opposed to "krzeczy" = 'to shout; to keep shouting'; the same goes for the other pairs in (24).

At this point one might wonder whether it is the suffix "nac" that

\textsuperscript{20} Of course, the final "-c" is just the standard infinitive marker, which is why some refer to the 'semelfactive' morpheme as an infix.
is inducing perfective aspect in (24). Although a case can be made that this follows from some notion of semelfactivity introduced by the suffix in question, we would have here the only case of a non-prefix being responsible for perfectivisation in all of Polish, which is suspicious.

Actually, "nac" does not always induce perfectivity. There is a class a verbs (not overly large) where the "nac" forms are imperfective, and are perfectivised via prefixation in the standard way:

\[
\begin{array}{ll}
\text{(25) imperfective} & \text{perfective} \\
\text{słabnąć} & \text{Osłabnąć} \\
głuchnąć & \text{Ogłuchnąć} \\
ślepnąć & \text{Oślepnąć} \\
żółknąć & \text{Zżółknąć} \\
mięknąć & \text{Zmięknąć} \\
moknąć & \text{Zmoknąć} \\
\end{array}
\]

As expected, standard tests establish the imperfectivity of the verbs in the leftmost column of (25).

There is however an important morphological difference between the verbs in (24) and those in (25). The latter are typically de-adjectival:

\[
\begin{array}{ll}
\text{(26)} & \\
słabnąć & \text{słaby (weak)} \\
głuchnąć & \text{głuchy (deaf)} \\
ślepnąć & \text{ślepy (blind)}^{21} \\
\end{array}
\]

---

21. To the extent we find related nouns, it is in general easy to show that the verb in question is derived from the adjective and not the
The verbs in (24) on the other hand are not de-adjectival. Many are straightforwardly denominal:

\[\text{(27)}\]

\[
\begin{array}{ll}
\text{krzyknąć} & \text{krzyk} \quad \text{(a shout; some screaming)} \\
\text{szepnąć} & \text{szept} \quad \text{(some whispering)} \\
\text{pisnąć} & \text{pisk} \quad \text{(some squealing)} \\
\text{błysnąć} & \text{błysk} \quad \text{(a flash)} \\
\text{szczyznąć} & \text{szczypta} \quad \text{(a pinch (of salt))} \\
\text{fundnąć} & \text{fundusz} \quad \text{(funds)}
\end{array}
\]

A large number of 'acoustic' verbs enter into the paradigm shown in (24). Here the base verb can be either a simple noun (28), a noun normally suffixed with "-ot" (29), or simply an interjection (30):

\[\text{(28)}\]

\[
\begin{array}{ll}
\text{świsnąć} & \text{świst} \quad \text{(a swishing sound)} \\
\text{trzasnąć} & \text{trzask} \quad \text{(a crashing sound)} \\
\text{grzmotnąć} & \text{grzmot} \quad \text{(thunder)}
\end{array}
\]

\[\text{(29)}\]

\[
\begin{array}{ll}
\text{trzepnąć} & \text{trzepot} \quad \text{(fluttering)} \\
\text{tupnąć} & \text{tup!} \quad \text{tup!;} \\
\text{gęgnąć} & \text{gęgot} \quad \text{(gaggling)} \\
\text{mignąć} & \text{migot} \quad \text{(flicker)}
\end{array}
\]

\[\text{(30)}\]

\[
\begin{array}{ll}
\text{paknąć} & \text{pac!} \quad \text{(swat)} \\
\text{frunąć} & \text{fru!} \quad \text{(flutter)} \\
\text{chłupnąć} & \text{chlup!} \quad \text{(splash)} \\
\text{buchnąć} & \text{buch!} \quad \text{(explosion)}
\end{array}
\]

One could propose that there are two homophonous suffixes "nąć", one of which selects adjectives and creates imperfective verbs, while the other is a perfectiviser. I claim that a much more natural account

\[
\begin{array}{ll}
\text{żółknąć} & \text{żółty} \quad \text{(yellow)} \\
\text{miękknąć} & \text{miękki} \quad \text{(soft)} \\
\text{moknąć} & \text{mokry} \quad \text{(wet)}
\end{array}
\]

noun; thus "ślepnać" comes from "ślepy" = 'blind', not "ślepie, ślepia" = 'animal eyes', given that it means 'to become blind' rather than (say) 'to acquire animal eyes'. Further, the noun "ślepy" = 'blind man' is patently to be derived from the adjective "ślepy".
flows from my theory. I propose that "nac" is a verbalising suffix that says nothing about aspect - in this way it does not complicate the aspectual system at all. When this suffix is attached to a noun or interjection, it is plausible to assume that the resulting aspectual structure starts with the aspectual structure of the relevant noun or interjection. By hypothesis, "nac" contributes nothing. Furthermore, it is very natural to assume that the aspectual structure of nouns and interjections is typically non-existent. This entails that a verb like "szepnac" begins in the lexicon with aspectual representation zero. Exactly as with "rzucio", two fully specified aspectual structures can emerge: (15) and (22). The former is of necessity perfective and belongs to "szepnac"; the latter is imperfective and needs a verb with an appropriately suffixed stem - "szepta" is precisely of the desired form. This logic extends to all the verbs in (24). As for the verbs in (25), they must begin their aspectual lives with the aspectual structure of the corresponding adjectives. Adjectives are predicates, and quite typically stative.

The corresponding aspectual representation is that of a simple box\textsuperscript{22}. Now since "sIaby" is just a box, and since "nac" (by hypothesis) contributes nothing, we immediately have a well-formed aspectual representation, and an imperfective one at that, exactly as needed.

The addition of a prefix (such as "O") will induce perfectivisation in the normal way by introducing a distinguished point into our box -

\textsuperscript{22} In languages like English or Polish (but not in all languages) this box must 'associate' with an appropriate verbal element prior to mapping to the time line. Hence 'It is big' vs. (*) 'It bigs'.
this corresponds to "Osnabnq%".

We see then that the data in (24) – (30) follow naturally from our theory, and crucially from the possibility of lexical aspectual representations containing zero. I regard this as reasonably strong support for the position I have espoused.

By way of an aside, I note that verbs ending in "nq6" for which we have no corresponding adjective, noun, or interjection do not constitute a problem for my theory. Examples are: "pragnq6" (to desire), "rosnqd" (to grow), "stygnqd" (to cool off). These can simply be viewed as having "nq6" permanently incorporated into their stems. As a result, their aspectual structure is not built up from that of a noun, adjective or interjection, but is simply that learnt for the verb. (Verbs, being predicates, necessarily mandate the acquisition of some (possibly zero) kind of lexical aspectual representation.) The usual situation, and the one which holds for "pragnq6", "rosnq6", and "stygnq6" is the presence of a very neutral lexical aspectual structure – just a simple box. This yields imperfectivity.

Two rather special verbs are "lunq6" (to begin to pour (of rain)) and "runq6" (to collapse). Neither is based on a non-verbal stem. Moreover, both are perfective, and in addition have the peculiar property of having no imperfective partners. I propose that these

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23. Polish grammatical terminology thus calls them "perfectiva tantum".
two verbs are represented - both lexically and finally - as in (15). On the one hand, this move captures the fact that "lunąć" and "runąć" are very unusual in Polish: They have very unusual lexical aspectual structures - in fact they are the only Polish verbs for which a distinguished point appears already in the lexicon. (Recall that most Polish verbs at this stage are just a (black) box, while inherent perfectives are zeros.) Now while this move does emphasise that "lunąć" and "runąć" are unusual in Polish, one might think that it does not account for the absence of imperfective partners. After all, nothing said so far seems to block putting a box around (15) and so obtaining a representation for a (non-existent) imperfective version of "runąć". Here I claim that independent factors (namely those responsible for language acquisition) conspire to make the hypothesised imperfectivisation impossible. The basic logic is as follows: Should someone learning Polish hear an imperfective of (say) "runąć", then the most parsimonious lexical aspectual representation that can be posited for "runąć" is not (15) but (21). Consequently any imperfective counterpart of "runąć" must be represented as in (22) and not as in (23). Note crucially that there is no way in Polish of going from (15) to (22).

In essence, the motivation for my acquisition-based account is the logic of 'no negative evidence'. If both "rzucić" and "rucać" are heard, the parsimonious lexical representation (21) is justifiably

---

posited. If "rzucac" is not heard, the language acquisition process can assume neither that it exists nor that it does not exist (the former by the lack of a positive datum, the latter by the logic of no negative evidence). Judgment must be withheld, and (15) posited in the lexicon. Upon hearing "rzucac", reanalysis to the simpler structure (21) can occur, and all is well. Thus what is special about "lunac" and "runac" is that they are precariously poised, always subject to a conceivable reanalysis. Our aspectual notation provides us with a natural way of capturing this precariousness of the relevant properties of "runac" and "lunac", at the same time differentiating them from all other inherent perfectives.

If we have reason to believe that "lunac" and "runac" do indeed have the (very unusual for Polish) lexical aspectual representation (15), then an immediate prediction is made – the logic behind our generalisation in (10) of chapter 1 rules out the existence of prefixed versions of these verbs. This time, our prediction is exactly right: Formations like "*Zrunac", "*Zlunac", "*Zrunac", "*ZAlunac", "*Dorunac", "*Dolunac", "*ODrunac", "*ODlunac" etc. are simply grotesque. I interpret this as evidence arguing in favour of my approach.

Finally, a few remarks on the relation of (11) to English dative alternations. Recall that in English a verb like 'eat' was taken to be a single point in the lexicon. Further (as suggested by aspect in Finnish, or the interpretation of Polish "Z") distinguished points have a privileged relation to whatever appears in the direct object
position of the relevant verb. Now suppose, along the lines suggested for Polish, that English 'give' is an aspectual zero (lexically). There being no point at this stage, one is led to believe that a verb like 'give' cannot establish once and for all a relation between its interpretation and some argument which will be forced to appear as the direct object. Consequently (subject to conformity with other principles - such as whatever forces causative agents into subject position), the choice of direct object for 'give' (and verbs of its ilk) should be free. Dative alternation then follows naturally. I shall pursue this line of reasoning in more detail in section 4.1.

Concluding this section, recall that prima facie inherent perfectives seemed to constitute a direct challenge to my aspectual theory. Nonetheless, by exploring all the options implicit in our (very minimal) notational system, a natural way of representing inherent perfectives was found. Not only did it avoid impinging on the logic of multi-prefixation, but the various properties that this representation predicted turned out to be exactly what was needed in all cases considered. And a promising line of research on the English dative alternation was opened up as well.

2.3 THE RULES OF THE GAME
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The aim of the following section is technical - it gathers together into one place all the aspectual notation I have proposed and characterises the machinery involved. I will be concerned with what
is allowed, with what is not allowed, and why. My goal is to be as explicit as presently possible without introducing formalism merely for the sake of formalising. One way to view what I am doing here is as an attempt at a 'grammar' of aspect.

RECAP

Let me begin with a recapitulation of the aspectual representations I have posited for various English and Polish verbs: 25

(a) jeść

(b) Zjeść

(c) Zjadać

25. Structure (r) has not yet been discussed, although it will be at the very end of this section. Formally it fills a gap in our inventory.
(d) iść 'walk' | (e) chodzić

(f) DOIść | (g) DOIchodzieć

(h) DOIchodzieć

(i) PO-WY-chodzić

(k) rzucać | (l) rzucić 'throw'

(m) krzyczeć 'shout' | (n) krzyknąć

(o) ZAKrzyczeć | (p) ZAKrzyknąć
All the above are to be thought of as 'final structures', i.e. as fully licensed aspectual representations. Thus not everything shown in (a) - (y) is stored in the lexicon. In part it cannot be, given that in languages like English verb phrases such as 'run', 'run a mile', 'run to the store' contrast aspectually but are not lexically
Secondly, the fact that there are parts of (a) - (y) which are entirely predictable motivates the view according to which verbs themselves are aspectually underspecified in the lexicon. Both of these considerations (lexical underspecification, and aspectual properties of phrasal projections) converge on a theory where 'final structures' like those shown above are built up by a process of derivation.

Every element in a final structure must be licensed. Some elements come directly from the lexicon, in the sense of being stored as part of the lexical representation of a verb. I refer to these elements as LEXICALLY SANCTIONED, and they are legitimate provided the process of derivation obeys all necessary conditions. All other elements will be licensed to the extent that they introduced into a representation for a reason internal to the aspect module.

For future reference, I state the following condition:

(31) Aspectual Licensing Condition:

Every element in an aspectual representation must be licensed. (To be licensed it must play a role within that representation.)

Note, however, that (31) should probably not be viewed as an independent principle of Universal Grammar, but rather as a corollary

26. One could of course force listing by positing run-1, run-2, and run-3, each with its own syntactic co-occurrence restrictions and each with its own aspectual representation. In the absence of even a shred of independent motivation, such a move is just a complication of the grammar, and hence to be avoided.
of the Principle of Full Interpretation (discussed in Chomsky (1986, 1989)).

Recall that the bulk of Polish verbal roots are stored in the lexicon as simple boxes. This is the general pattern. There are of course several classes of verbs such as indeterminate verbs of motion (e.g. "chodzić") and inherent perfectives (e.g. "rzucić") that do not conform to it. But the majority of Polish verbs are to be accounted for in this way, as indeed are borrowings (e.g. "stopować" from English 'stop') and coinages (e.g. colloquial "kiełbasić się" = 'get all mixed up', from "kiełbasa" = 'Polish sausage').

In English there is also a general pattern, but here it is the presence of a single lexical point. Verbs with canonical activity usages will all partake of this representation. However, other special classes of verbs in English behave differently. Thus 'know' and 'arrive' will have the 'final structures' shown in (a) and (y) respectively already in the lexicon. The difference between the general pattern of Polish and that of English is tied to the presence of systematic morphological means of point introduction in Polish (via the perfectivising prefixes) versus its absence in English.

THE PRIMITIVES

As promised at the start of this study, the number of different primitives in the proposed aspectual theory is minimal - in fact there are just two: the box and the point. Thus once we account for the Polish contrast between "jeść" and "Zjeść", we have all the primitives
we need. Further it is eminently natural to identify imperfectives with boxes and perfectives with visible points, rather than (say) the other way round. Both boxes and points are naturally viewable as units. Moreover, boxes are units with the power to potentially contain other units, whereas points, being minimal units, lack this power. In addition, distinguished points serve as foci around which the rest of an event can be organised.

It is striking that while the internal composition of some of the representations in (a) - (y) can get quite intricate, nowhere does one see triple embedding. We do find boxes inside boxes, but not boxes inside boxes inside boxes. I take this to be significant, and predict that it should hold up as other languages are investigated in comparable depth. As for the rationale behind this generalisation, I suspect one should look for something deeper than a mere stipulation about only TWO layers of boxes being allowed. The obvious question here is why two, and not three or sixteen... The reader will recall that when discussing the visibility of distinguished points, I had to invoke a 'subjacency-like' principle, according to which only points that are IMMEDIATELY contained in an outermost box are VISIBLE (say for tense purposes). Keeping the same notion of visibility, we can derive the generalisation about at most two layers of boxes being allowed by requiring the following:

(32) Box Visibility:

All boxes must be visible (in our technical sense of the word).
The fact that all boxes but not all points must be visible is plausibly tied to the existence of operations like progressivisation in English, which deliberately hides (renders invisible) all distinguished points. Thus the absence of box-hiding operations is predicted by the theory, apparently desirably.

Parenthetically, a second generalisation that seems to emerge from an inspection of (a) – (y) is the absence of multiple reduplication. This could conceivably be an accidental artifact of the particular languages chosen for study, since Polish reduplicates boxes but not points, while English reduplicates points but not boxes. (Other imaginable multiple reduplications will be ruled out by the constraint on box visibility just discussed.) Should this turn out to be non-accidental, however, a natural way of accounting for it might be a requirement that all instances of reduplication be visible.

Finally, it will be observed that each of the 'final structures' in (a) – (y) has an outermost box which contains all other notational elements. This box serves to indicate that (at some level) a single predication is involved in each case. One such level is the interaction between aspect and tense. The two properties of boxes – viz. that they are units and that they can contain other units – are of course crucially relied on here. Nothing else is. Derivationally, the presence of this outermost box will often be due to a 'last resort'-type box drawing operation automatically applied. Hence I sometimes call the outer box one that exists 'by default'.
THE OPERATIONS

Aspectual operations convert stored lexical structures into what I call final structures. For a legitimate conversion, licensing constraints will have to be satisfied. Since we have two primitives, we need two basic operations: the introduction of points, and the introduction of boxes. Both can be effected reduplicatively or non-reduplicatively (i.e. from scratch). I begin with the latter.

As already mentioned, the fundamental constraint on boxes is that they be visible. Further, whenever a box is drawn (i.e. added in the course of a derivation), it will have to play a role in that derivation. All that outer boxes can do is to contain, hence to contain something is the relevant role for an added box.

Distinguished points on the other hand are subject to a very different principle:

(33) A distinguished point must serve as focus for the rest of the contents of the box in which it is immediately contained.

Foci come in two types: inceptive and culminative. The fact that we have two options here is a direct reflection of what I called entrance-exit duality in chapter 1. Ultimately this is due to the lack of a temporal ordering primitive in the aspect module (as opposed to a module like tense). Inceptions are foci from which the rest of an event flows. Culminations on the other hand mark the finishing climax to which the subparts of an event lead. For many verbs (e.g. those of creation), a direct object establishes a homomorphism between
subparts of this object and subparts of the event denoted by the verb, thus giving the latter an organised structure. A culminative distinguished point marks the attainment of this structure, and so can be said to organise the event in question. I will call a point for which it has been established how it satisfies condition (33) IDENTIFIED.

From a purely formal point of view, the condition (33) on distinguished points makes some very important distinctions:

(i)
The structure in (i) presents us with no prima facie violation of our constraint - there is nothing (aspectually visible) in the box in question for which its distinguished point fails to serve as focus. Contrast this with the situation in (ii). Setting aside the reduplicative interpretation, one can ask if any other interpretation is possible. Concretely, we are asking if an aspectual unit can have more than one focus. I suggest the answer is negative. Suppose, for instance, that the leftmost point is inceptive and the other culminative. Applying condition (33) to the former, we see that it
must be the focus of everything else in the box that immediately contains it. It will thus have to be the inception of a culmination. Now the other point will need to be interpreted as a culminative focus for the first, i.e. as a culmination of an inception of a culmination. But the first point will now actually be the inception of a culmination of an inception of a culmination; and so on. It is clear that the logic is that of infinite regress. I conclude that the putative (non-reduplicative) interpretation of (ii) is illegitimate.

The same problem arises for structure (iii). This representation will in fact always be illegitimate since it cannot even be saved via a reduplicative interpretation (the reason being economy of representation).

Now consider (iv) (which appears as (g) above). Box reduplication provides an initial level of structure to the event (and indeed results in the well formed representation (e)). This structure can then be focused, by the addition of a distinguished point. Thus in (iv), the distinguished point organises the rest of the contents of the box immediately containing it by organising the structure that ensues from reduplication. But this reasoning fails completely in the case of (v). Here the point is trying to serve as the focus for a single unit (= the inner box). Just as in optics a single ray of light cannot be focused (one needs at least two to determine the focus of a lens or mirror), so here the point does not have enough material in order to establish itself as a focus and so satisfy (33). (Of course, A point could focus the contents of the inner box by appearing
inside it, but THE point in question crucially does not.) For exactly the same reason, (vi) is ill-formed. The reader will recall that the foregoing is crucial in accounting for the bar on multi-prefixation demonstrated earlier for Polish.

Implicit in our account so far is the operation of reduplication, whereby the appearance of two elements is interpreted as a whole series of whatever one such element designates. I make no stipulation as to what can serve as the input to reduplication – anything can, provided all other principles are satisfied. In practice this implies that anything beyond the complexity of a single box containing a point will never be reduplicated, as otherwise the constraint on (box) visibility will be violated. I will assume, moreover, that aspectual reduplication must be total; a structure cannot have proper subparts of itself undergoing the process.

A point that has been reduplicated (as in structure (u)) has a definite role and a clear interpretation; thus we can say that it is identified. Terminologically then one can state the following constraint:

(34) Point Identification Condition

A point must be either distinguished (and so satisfy (33)) or reduplicated.
Such a point is called identified.

Condition (34) is to be viewed as the avenue by which points satisfy
(31).27

So far, for a representation like (i) (or (b), (f), (t), (y)) I have merely indicated that there is no prima facie violation of the Point Identification Condition, insofar as there is NOTHING (visible) in the relevant box which the distinguished point FAILS to focus. However, in order to count as identified, a distinguished point must in addition actually be interpreted as a focal climax. (Note that one can think of elements not shown in aspectual representations that are subject to focusing – recall the 'black box' terminology.) The 'power to focus' is usually28 given to a distinguished point via an association relation with an appropriate morpheme or syntactic constituent.

In Polish and in similar languages, the relevant association relation is that between a distinguished point and a perfectivising prefix. The latter enables us to interpret the former, thus giving the point the power to become the focus of the event. Depending (in part) on the nature of the prefix chosen, either the prefix itself is sufficient to identify the distinguished point (this is illustrated in (36) and (38)), or the prefix might act in concert with an argument in

27. Thus if identification is seen as the mode of interpretation relevant for points, then the stated condition might ultimately follow from FI – the principle of Full Interpretation discussed by Chomsky (1986, 1989). A similar statement can be made with respect to our condition on boxes.

28. The reason for the qualification 'usually' is the special behaviour of inherent perfectives.
direct object position (as shown by the 'measuring out' use of "Z" in (40) and (42)):

(35) Krzyczała.  
'She was shouting.'

(36) ZKrzyczała.  
'She shouted out.'

(37) Chorowała.  
'She was ill.'

(38) ZChorowała.  
'She became ill.'

(39) Jadźa jabłko.  
'She was eating an apple.'

(40) Zjadźa jabłko.  
'She ate an apple.'

(41) Budowała dom.  
'She was building a house.'

(42) Zbudowała dom.  
'She built a house.'

Specifically, in (38) the prefix enables the distinguished point to be interpreted as a point of inception, while in (42) the prefix organises the event of building by mapping it into the organisation (= architecture) of a house.

English has no comparable overt prefixing morphology, which means that extensive use must be made of point identification via association with appropriate syntactic constituents. The argument appearing in direct object position will standardly serve this function: This is my analysis for (w) = 'build a house', as well as for unaccusatives like (y) = 'arrive'. Alternatively, if no (appropriate) argument is forced to appear in direct object position,
point identification can be accomplished if the point is reduplicated rather than distinguished. This gives us activities like \((u) = \text{ 'run'} \). By appropriateness of a direct object I mean one with sufficient structure to provide organisation for the event - note that the noun phrase 'the cart' qualifies as appropriate in a VP like 'build the cart' (an accomplishment) but not in 'push the cart' (an activity). Activity predicates in English are thus represented aspectually via reduplication (as in \((u)\)). Given the lack of (overt) sanctioning morphology, this kind of structure is to be viewed as a last resort method of point identification.

The operation called merger is a way that English can use to obviate last resort reduplication. I illustrate with the VP 'run to the store' = \((t)\), which we might contrast with 'run in the Boston Marathon'. It is plausible that a PP like 'to the store' is best represented aspectually as a point in a box, while 'in the Boston Marathon' is a box tout court. (Note that the former is structured and in fact sharply focused on an end, while the latter is not. See chapter 3 for elaboration.) The fact that the aspektual information implicit in these PPs combines with the aspektual information of the verb resulting in a composite VP representation is captured by the operation of merger. The representation of the PP and that of the V are merged to give a representation for the VP. Formally, merging can be viewed as overlaying one representation on top of another such that the outermost boxes of each coincide to constitute the new outermost box (cf. the discussion of 'when' in chapter 1 where the same notion was invoked). Thus when the representation of 'run' (a single point,
now with a 'default' box) is merged with that of 'to the store' we arrive at representation (t), where the distinguished point of 'run' is identified parasitically by merger with the distinguished point of 'to'. (Interestingly this seems to produce unaccusative behaviour.) Trying to identify a distinguished by merger in the 'in the Boston Marathon' case fails as the PP has no point in its representation. Here the point of 'run' will not be able to be distinguished, so it must be reduplicated (producing an activity).29

I should also mention the aspectual operation posited for English progressives. This is to be thought of as hiding all points (i.e. rendering them invisible). Its interaction with stative predicates was described in section 1.8 - in brief, points are forced to appear so that they can then be hidden, which produces very special readings. The following is an interim summary:

primitives: box, point
operations: box introduction, point introduction, reduplication, merger, point-hiding
conditions: Box Visibility = (32), Point Identification Condition = (34).

DERIVATIONS

At this point I have discussed the derivation triggered by all the English VPs in (s) - (y), except that for 'know' which is trivial since it is well-formed aspectually already in the lexicon. Thus (s),

29. Thus contrast: 'I ran in the Boston Marathon for three hours', '*I ran in the Boston Marathon in three hours', and 'I ran the Boston Marathon in three hours'.

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which is a lexical structure, is also a final structure. For the record, let me go over the Polish cases. Structure (a) is well-formed lexically, and structure (b) is derived from (a) via the addition of the prefix "Z" which acts in concert with a direct object to identify a distinguished point. Structure (c) is derived from (b) by the addition of an outer box - an operation sanctioned by suffixal morphology. "Zjadać" therefore has the following derivation:

```
  []  ->  .  ->  [·]
(jeść)     (Zjeść)      Zjadać
```

Structure (d) comes straight from the lexicon, and leads to (f) and (h) as (a) leads to (b) and (c), respectively. Structure (e) is stored lexically as (d) reduplicated, or equivalently as (d) plus an instruction to reduplicate. To be well-formed it must acquire an outer box, and its morphology allows this. In like manner, (g) starts with the lexical representation of (e) and then acquires a distinguished point licensed by the prefix plus an outer box sanctioned by stem/suffix morphology. It is the operation of reduplication (cf. (e)) that provides the event with enough structure for it to be focusable by the distinguished point. An appropriate derivation for (perfective) "DOchodzić" is thus easy to construct:
Finally, (j) begins life as (d) and acquires an inner point like (f). A further outer distinguished point will only be tolerated if the outer prefix has the multiplicative property which sanctions point introduction together with reduplication. Distributive "PO" is such a prefix, and so (j) is well-formed: it is derived by reduplicating (f), which allows point introduction, and then adding the outer box. Looking ahead somewhat, it is interesting that in structure (r) this very prefix first sanctions point introduction and then reduplication. Apparently, the point must be introduced as early as possible, this being the chief function of the perfectivising prefixes.

A purely technical question now arises with respect to multi-prefixation. Given that English can use reduplication (of points) as a last resort, could not a parallel use of last resort reduplication (of boxes) save verbs of the form PREFIX-PREFIX-root? The answer (in general) is no, since what results is not (g) but rather the following:
This is a clear violation (inter alia) of box visibility. Simpler representations for PREFIX-PREFIX-root are ruled out as before.

Structure (1) (like its counterpart (k)) is aspectually zero in the lexicon, this being standard for verbs of the inherent perfective class. Into this (zero) representation, a single box cannot be introduced (as it will have nothing to contain), nor can a single point be added (there being no appropriate (prefixal) morphology). In fact, on a purely aspectual level, all conditions on points and boxes are satisfied (vacuously). However, in order to interact with the rest of the grammar, something must emerge. Since one element cannot emerge, by general economy principles, exactly two elements must do so (in what can be viewed as a mutual licensing relation). Prima facie the following possibilities arise:

```
[ ]   [ ]  .  .  .  .  .
```

The first two are fully well-formed, and correspond to "rzucić" and "rzucac" respectively. Note that "rzucac" has the right suffixal morphology to allow a box-inside-box representation. The third and fourth possibilities will only be well formed if further work is done.
(e.g. an outer box added), and so are disfavoured by economy. The final possibility is ill-formed and irredeemable, and so cannot arise.

Structure (n), like structure (1), is an inherent perfective, the verb "krzyknąć" being derived from the noun "krzyk". This verb can appear in prefixed form - as in (p) - the derivation of which begins as an aspectual zero, gains a point via the prefix and then an outer 'default' box. Diagrammatically:

\[
\emptyset \rightarrow . \rightarrow [ ]
\]

zero ZA ZAkrzyknąć

Thus in "ZAkrzyknąć" no mutual licensing is needed, but the aspectual zero property of "krzyknąć" is crucial. Further, corresponding to the noun "krzyk", the Polish lexicon also lists the verb "krzyczec", a simple imperfective, which like all simple imperfectives is a box both in the lexicon and finally. Perfectivisation can apply in the usual way, yielding (o):

\[
[ ] \rightarrow [ . ]
\]

(krzyczec) ZAkrzyczec

Finally, a structure like (o) or (p) can be re-imperfectivised by the addition of an outer box: This can be seen in (q), where the reader will note the suffixal morpheme which licenses box-layering (i.e. box-inside-box).
The derivation of (r) has already been discussed. I should add that while (q) and (r) are both imperfective (in fact both are re-imperfectivised forms), they have somewhat different semantics. Thus it has been noted in the literature (e.g. by Piernikarski (1969, 1975)) that "POkrzykiwać" must mean 'to shout out FROM TIME TO TIME'. "POkrzyczęć" simply means 'to spend some time shouting', so it is significant that "POkrzykiwać" does NOT simply mean 'to be in the process of shouting'. This contrasts with a form like "ZAkrzykiwać" which is straightforwardly the imperfective of "ZAkrzyczęć". In my theory, the obligatory series ('from time to time') component in the interpretation of "POkrzykiwać" is captured by the reduplication (triggered by "PO") in (r). "ZAkrzykiwać" on the other hand is simply what is shown in (q). The fact that my theory handles this rather subtle distinction in a natural way is to be construed as evidence in its favour.

2.4 FURTHER JUSTIFICATION

Up to this point, my evidence for the box-layered representation of "rzucać" has been plausible but entirely theory internal. Significantly, there exist empirical considerations in favour of representation (k) and against something prima facie simpler (such as one single box). If "rzucać" were a simple box, we would expect it to be perfectivisable by the addition of a prefix (e.g. Wrzucać). Importantly, "Wrzucać" exists in Polish, but can never be construed as a perfective. My theory straightforwardly accounts for data of this
sort. No legitimate derivation can begin with my representation of "rzucac" (= (k)) and then introduce a distinguished point. If the point is added outside both boxes, box visibility will be violated. If it is added inside both boxes, the point will be invisible, so its focusing properties can never be checked. Finally, if the point is placed inside the outer box but outside the inner one, the structure is irredeemable (again ultimately for point-identification reasons: see the discussion of (v),(vi)). The verb "Wrzucać", as mentioned, does exist, and its derivation begins with an aspectual zero (common to "rzucić" and "rzucac"), to which the prefix contributes a point, to which are added two boxes (licensed by box-inside-box sanctioning morphology). An imperfective verb (with structure (q)) results:

\[
\emptyset \rightarrow . \rightarrow \begin{array}{c}
. \\
\end{array} \rightarrow 
\begin{array}{c}
. \\
\end{array}
\]

zero \quad (W) \quad (Wrzucić) \quad Wrzucać

In this way, as is desired, "Wrzucać" can never be given a perfective representation (say, simply point-inside-box), but only under the crucial assumption that "rzucac" is never represented as a single box. Note by the way that with respect to stem shapes, the Polish lexical entry for 'throw' need only tell us that "rzucac" is the suffixed version of "rzucić". As usual, the relevant suffixation

30. Note that "rzucić"/"rzucac" are typical of the whole relevant inherent perfective class in this regard.
automatically correlates with box-layering. This immediately predicts the stem shape in "Wrzućać" above. It further tells us that of the two well-formed structures that emerge from zero, the perfective one will be realised as "rzucić" and the imperfective (box-layered) one as "rzućać". This is as it should be. (Recall a somewhat similar discussion in chapter 1 about the stem shapes "iść"/"chodzić".)

Exactly the same logic as that which rules out perfective "Wrzućać" applies to a class of verbs mentioned (but not fully analysed) in (9) of chapter 1. These are the obligatorily habitual imperfectives such as "czytywać". I propose to represent them lexically as box-inside-box ( = (k), the 'final structure' of "rzućać"). The presence of two (nested) boxes is made plausible by the presence of two (nested) predications in the interpretation of "czytywać": one for 'reading', and one for 'having a habit (consisting of reading)'. This representation immediately accounts for an observation standardly made in the aspectual literature on Polish, viz. that habitual verbs like "czytywać" resist further perfectivisation. Thus *
"Zczytywać" is inconceivable with the meaning 'to begin to habitually read'. The logic of the preceding paragraph is all that is needed to take care of data of this type.

One might wonder whether obligatorily habitual verbs like "czytywać" would not more naturally be represented via reduplication. With

31. If so, then the logic of the preceding paragraph would unfortunately fail.
this observation I agree entirely. Moreover, I claim that the fact that verbs like "czytywać" are represented by structures like (k) rather than the more natural (e) sheds light on a rather curious puzzle of Slavic aspectology. Linguists discussing the "czytywać" class of verbs in\textsuperscript{32} invariably note that it is small, closed, and even shrinking - despite the fact that morphologically such verbs are trivially easy to construct. Under my theory, this state of affairs is due to the fact that the relevant verbs are not represented as in (e), but must be individually stored with representation (k), upon which a habitual interpretation can be forced (even though habituality would more naturally correlate with reduplication). As evidence for this approach, I note the existence of triplets like "iść"-"chodzić"-"chadzać", consisting of a determinate imperfective, an indeterminate imperfective, and an obligatorily habitual imperfective respectively. My theory straightforwardly provides three different ways to represent the three different kinds of imperfectivity here displayed:

(43) 

\begin{center}
\begin{tabular}{ccc}
   \makecell{\text{ } } & \makecell{\text{ } } & \makecell{\text{ } } \\
   iść & chodzić & chadzać
\end{tabular}
\end{center}

(In the absence of points and prefixes, these options are in fact

----------

exhaustive.) Finally, I should say that "chadzać" has a much more 'stylistically learned' flavour than either "iść" or "chodzić", something that I take to follow from its aspectual representation (upon which one must learn to impose a habitual reading).

I would further like to suggest that many of the 'special' (= #-marked) English sentences discussed in chapter 1, such as '#Bill reads Macbeth', which are rescuable only through the imposition of something like habituality, also trigger box-inside-box representations. Recall from (s) - (y) that (non-special) English does not make use of box-layering, having no (overt) morphology for such purposes. Thus the special status of '#Bill reads Macbeth' follows from the extra (non-morphologically-triggered) work that must be done to provide this sentence with an interpretation - viz. the adding of an outer box, upon which a habitual reading can then be imposed. This derivation can be schematised as follows:

```
 . --> [ . ] --> [ . ]
```

The same reasoning applies to present tense sentences expressing potentiality, such as 'This device kills flies'. The inner box would correspond to killing, and the outer to having a certain (insecticidal) potential. Naturally it is the outer box that is mapped to the time line. Accordingly, a device that kills flies need not be killing one at the present moment. The outer box protects the inner one from being mapped to the time line, thus saving us from a
necessary present-killing interpretation.

The reader will recall that re-imperfectivisation in Polish is carried out by adding an outer box (see structure (c)). Given the box visibility condition, the system predicts that re-re-imperfectivisation will be disallowed. Significantly, dictionaries do not list such forms. There are, however, reports in the literature (Szpyra (1987), Czaykowska-Higgins (1988)) of the occasional (and quite rare) tertiary (or doubly derived) imperfective occurring in a highly colloquial register. Fortunately, for all such forms that I know of, a good case for reanalysis can be made. Consider "WYmiatywać" (to sweep out), which is related to "WYmiatać" and "WYmieść". The imperfective "mieść" is very restricted in its range of use - one can use it of the wind blowing leaves, but never of sweeping. Accordingly, "WYmieść" is not built up from "mieść", but is a reanalysed inherent perfective. Thus "WYmieść" will be represented with structure (l), "WYmiatać" with structure (k), and "WYmiatywać" with structure (q). The latter contains only two boxes and thus no violation of box visibility. A similar account can be given for "ZAplatywać" = 'to plait'.

Likewise, "przechadzać się" (to stroll) is not to be thought of as "chadzać" plus a perfectivising prefix. The manners of motion here are not identical: The latter is walking while the former is strolling. We thus have reanalysis, with "przechadzać się" being roughly synonymous with "spacerować", and related to the noun "przechadzka" (a stroll).
2.5 CONTRA AN ALTERNATIVE

There are a number of ways in which I could further illustrate my methods of aspectual analysis. One way is to apply the proposed system to different languages and different language families. To some extent this will be done in chapter 4, although even at that point I will not be claiming to have established a 'discovery procedure' which algorithmically converts raw data from a language into an aspectual theory thereof. (We are after all dealing with science.) In this section, I will illustrate how the proposed aspectual system can be used to decide between competing analyses of familiar data. In particular I will present arguments against a slight variant for representing the Polish verbs of motion. In this way I will demonstrate how to apply the logic of my theory from a slightly different point of view.

The alternative proposal (which I will argue against) runs as follows: Suppose one were to interchange the representations of "chodzić" and "chadzać". The latter would then be represented via box reduplication, and the former by a single box inside an outer box. We would thus replace the original array of structures in (44) with the alternative array in (45).
What renders (45) minimally (though not very) plausible is that (k), (v), and (h), which all in some sense 'look alike', would all be pronounced using "chodzić" (i.e. as "chodzić", (perfective)
"Dochođiće", and (imperfective) "Dochođići" respectively).

Immediately, however, several serious problems can be seen to arise.

Recall that under the original theory, obligatory habituals like "chodźać" are special in that the various subwalkings constituting the habit of walking (more generally: the subevents constituting any habit) are not explicitly represented in aspectual structure. This correlates with obligatory habituals being stylistically rather special, and with the fact that only a dozen or so verbs possess obligatorily habitual forms (several being archaic). Indeterminate imperfectives like "chodzić" on the other hand are common in everyday speech and in no sense stylistically marked. This corresponds with their transparent aspectual representation (viz. reduplication). The alternative theory completely reverses this logic. Obligatory habituals are now transparent and to be expected; only indeterminate imperfectives require a special interpretive convention and so might be expected to manifest stylistic restrictions. If so, it is completely mysterious why a few verbs like "czytać" (to read) have obligatory habituals ("czytywać"), whereas thousands of others (e.g. "kończyć" = 'to finish') do not (*"kańczać"). Recall that morphologically, putative obligatory habituals are easy to construct. Of the theories under consideration, only the original one (with its special interpretation for the representations of "chodźać", "czytywać", etc.) indicates where the brake halting such formations might be found.
Secondly, once an obligatory habitual is represented via (e), we should expect it to be straightforwardly perfectivisable, as shown below:

Yet it is a standard observation that obligatory habitualls like "chadać" or "czytywać" cannot be perfectivised. (Thus "ZAczytywać" cannot mean 'to enter into the habit of reading'.) In desperation, a proponent of the alternative theory might propose a constraint whereby fewer than THREE entities must be immediately contained by any one box. Conceptually, this immediately raises the question of arbitrariness: Why three and not eight or seventy-eight? Empirically, it leads to problems with distributive "PO", as we shall shortly see (cf. structure (j) in section 2.3).

Note that it would be untenable to say that only verb-of-motion obligatory habitualls have structure (e), while other obligatory habitualls (e.g. "czytywać") are represented via (k).³³ (Actually such a move would have to be made if one were to take seriously the proportion "chodzić" : (imperf.) "DOchodzić" :: "czytywać" : (imperf.) "DOczytywać".) For a start, this arbitrarily splits up the

³³. The motivation here would be the fact that only verbs of motion have specifically indeterminate imperfectives.
obligatory habitual natural class. What is even more grave is the consequent prediction of perfective-imperfective splitting: A verb like "DOczytywać" (N.B. a non-verb-of-motion) might be sometimes perfective (via (v)) and sometimes imperfective (via (h)). Yet such (non-motion) verbs (e.g. "DOczytywać") are always unambiguously imperfective. (Recall that under the original theory there can be no derivational relation between "czytywać" and "DOczytywać". The structure of the former (one box inside another) is derivationally inert, for focusing reasons. The few obligatory habituals are simply lexically stored with these inert structures; "DOczytywać" comes from "czytać".)

This brings us to the most serious problem of all. Under the original theory, a derivation from (k) to (v) is forbidden (given that ONE unit cannot be focused). This in turn rules out free multi-prefixation. The alternative theory needs to posit structure (v) in order to account for verb-of-motion perfective-imperfective splitting. Therefore it must abandon the above logic ruling out free multi-prefixation. It is difficult to see how this logic can be replaced. Recall that a simple templatic approach (barring more than one prefix on purely morphological grounds) is untenable given distributive "PO" and accumulative "NA".

In fact the original theory nicely distinguishes multi-prefixation in general from multi-prefixation with distributive "PO" or accumulative "NA". The former is disallowed for focusing reasons; the latter is legitimated by reduplication (since the relevant prefixes
have multiplicative power). It is far from obvious how one can make such a distinction in the alternative theory being discussed. Moreover, it is not at all clear that this alternative theory can even represent a verb such as "PO-WY-chodzić". (This is (j) under the original theory.) Semantically, we want to construct "POWYchodzić" from imperfective "WYchodzić" or perfective "WYjść". The following representation is dubious:

```
  .
  .
```

In the absence of stipulations ad hoc, it would imply free multi-prefixation. On the other hand, it is rather likely that structure (j) (shown below) would also be unavailable:

```
  .
  .
= (j)
```

The reason is that (j) violates the putative THREE constraint mentioned earlier. Thus the alternative theory runs into serious difficulties when trying to handle distributive "PO" or accumulative "NA".

I conclude, as was to be foreseen, that the alternative position sketched in (45) is untenable. This section thus shows us how dubious analyses can be filtered out by the theory proposed.
2.6 SUMMARY

The proposed aspectual machinery can be summarised as follows:

primitives:
- the box (a unit that can contain others)
- the point (a minimal sub-unit)

operations:
- point introduction
  (typically lexically or morphologically sanctioned)
- (outer) box introduction
  (lexically or morphologically sanctioned; otherwise (if an outer box already exists) special)
- total reduplication of a unit
  (lexically or morphologically sanctioned; otherwise a last resort)
- merger
  (overlapping of aspectual structures)
- point-hiding
  (triggered by special morphology, namely English progressivisation)

conditions:
- Aspectual Licensing:
  every element in an aspectual representation must be licensed.
- Box Visibility:
  all boxes must be visible
- Point Identification:
  a point must be distinguished or reduplicated.

As mentioned above, the stated conditions may be reducible to Full Interpretation; economy considerations also apply.
CHAPTER 3

PREPOSITIONAL NOTIONS AND ASPECT

At a number of points in the course of this study, we have seen prepositional concepts intimately associated with core aspectual distinctions. Given that interactions of this nature crop up in unrelated languages and, when present, tend to be systematic, I take it that this association is to be viewed as non-accidental. In fact, I wish to propose that prepositional notions are fundamentally predicative (verb-like), which has the consequence that aspectual characteristics are to be expected of them.

To review briefly, a particularly striking correlation between the morphology of aspect on the one hand and prepositions on the other can be found in the Slavic languages, exemplified here by Polish. We have already seen that nearly all the perfectivising prefixes of Polish

1. The languages constituting the major focus of investigation here (Polish and English) have prepositions; many others have postpositions. This head-initial / head-final difference plays no role in my theory, so that my use of the term 'preposition' should be seen as a convenience which I use in place of hybrids such as 'pre/postposition' or 'adposition'.

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correspond directly to Polish prepositions, not only in terms of phonological-morphological composition but also in terms of semantic content. Thus the imperfective infinitive "lecieć = 'to fly' has perfective counterparts such as "DOlecieć = 'to fly to a certain place' (cf. "do nas" = 'to us'), "ODlecieć = 'to fly away' (cf. "od nas" = 'from us'), "Wlecieć = 'to fly into a certain place' (cf. "w nas" = 'in us'), etc. Examples of this sort can be multiplied at will and are to some extent summarised in table (4) of chapter 1. In section 3.2 I will present additional evidence from children's acquisition of Polish for the tight connection between Polish prefixes and prepositions.

A language like English does not manifest this Slavic correlation pattern, but nonetheless can be seen to exhibit aspectual-prepositional interactions. Keeping to our verb 'to fly', we note that it is a basic example of a Vendlerian activity predicate. As is typical for such predicates, it can be converted into an accomplishment, and in more than one way. Providing a direct object as in (1a) straightforwardly does the trick, as does the addition of an appropriately chosen prepositional phrase. Thus (1b) and (1c) are accomplishments, but not (1d) or (1e):

\[(1)\]
a. to fly 100 kilometres  
b. to fly to New York  
c. to fly into Logan Airport  
d. to fly through the air

\[\underline{\text{----------}}\]

2. Importantly, the correlation does not hold in the reverse direction.
Note that according to my theory, (1a), (1b), and (1c) receive the same aspectual representation (viz. a box containing a single distinguished point). Of course, Polish verbs like "DOlecieć", "ODlecieć", and "Wlecieć" also correspond to structures with one distinguished point. In both Polish and English then prepositional morphemes play a central aspectual role.

As mentioned earlier (section 1.7), the main thesis of Hale (1985) is the detectability in Warlpiri of an opposition (central / non-central in Hale's terms) that pervades the grammar of the language. It crops up in the Warlpiri local and directional Cases (which correspond to English and Polish prepositions), in the aspect system, as well as in both finite and non-finite complementiser series. In my system, [+ Central] (which is where imperfectives fall in Hale's schema) corresponds to boxwise behaviour, so that [-Central] must be associated with a visible distinguished point.

Finally I will note that the Case-aspect connection is certainly not unique to Warlpiri. In Finnish (im)perfectivity is signalled by partitive versus non-partitive Case, while what for a speaker of English are core 'prepositional' notions (e.g. inessive, illative, ablative, and so forth) are also analysed as Cases in Finnish grammars. I conclude that a certain kind of homology between aspect and prepositional notions pervades the human linguistic faculty. To the extent that this is captured by my notational system, I will construe this as support for my theory.
Much has been written on the subject of prepositions in languages like Polish and English. The bulk of the literature takes as fundamental the observation that the core prepositions are associated with spatial concepts. While there is a sense in which speakers of English and Polish accept this association, there is no reason a priori for the linguist to do so. My suspicion is that the spatial-prepositional correlation may have to be relegated to the status of a truism, similar to the correlations between verbs and 'actions', or between subjects and agents. I hypothesise that core prepositions are spatial to the extent that 'core verbs are actional' or 'core subjects are agentive' - that is, that all such facts (insofar as they are facts) should follow (when valid) from deeper considerations or the interaction thereof.

Consider the English prepositions 'at', 'in', and 'on'. With respect to 'on', the first idea that typically comes to mind is the top of some reference object (this object being the 'x' in 'on x'), while for 'in' one thinks of interiors. What however is an interior? To define it in terms of 'in' would be circular, hence defining 'in' in terms of 'interiors' is just giving a new label to an old problem. As for tops (which one can characterise as vertically highest parts), these are clearly only one sub-element of the meaning of 'on'.
(2) a. the picture on the wall  
b. the dust on the lamp  
c. the clothes on the line

Common expressions like those in (2) show the need for a much broader characterisation. 3 In fact, in (2c) the clothes in question may be entirely below the relevant line, apparently directly contradicting the 'vertically highest' component in the meaning of 'on'.

Naturally one can always resort to a battery of homophonous 'on's - but given the unificational goals of science this is clearly a last resort. Further the fact that the Polish preposition in "na stole" (= 'on the table') appears fully naturally in the translations of (2) (shown in (3)) points to the desirability of the afore-mentioned goal of providing 'on' with a much broader characterisation.

(3) a. obraz na ścianie  
b. kurz na lampie  
c. bielizna na lince

My hypothesis is that, given the diverse geometric configurations in (2) and (3), such a characterisation cannot be inherently spatial. Rather, as a reasonably good first approximation, consider an explication of 'on' (and of Polish "na") 4 in terms of support. Many common artifacts are specifically designed to have tops for purposes of support - hence, for instance, 'the book on the table'. But while

3. Note that a very weak characterisation of 'on' simply in terms of 'contact with a surface' will not do: If a book is on a table, then that table is not on that book.

4. I concentrate on Locative Case taking "na" and on Locative/Accusative "na".
being sufficient, tops are by no means necessary for support to occur. This is what legitimates (2) and (3), where in each case some kind of support is crucial while the notion of a 'top' is irrelevant. Needless to say, 'to be on one's feet' and 'to stand on one's head / toes' ("być na nogach", and "stać na głowie / palcach", respectively, in Polish) now immediately fall into place, despite the feet, head, and toes (in the relevant configurations) being part of the body engaged in the standing.

Finally, consider completely non-spatial uses of 'on'. Good examples are the following:

(4)  
  a. I'm counting on you.  
  b. You can rely on him.  
  c. He's on a pension.

As might be anticipated, direct translation into Polish yields sentences with "na":

(5)  
  a. Liczę na ciebie.  
  b. Możesz na nim polegać.  
  c. Jest na pensji.

Once again the notion of support (moral, societal, financial) is transparently discernible, the absence of characteristic geometry notwithstanding. Hence the use of 'on' and of "na" in the languages under study in (4) and (5).

Turning next to the English preposition 'in' (and to its Polish counterpart "w"), I would like to propose that, as a first approximation, the relevant notion here is that of containment. This
notion, in contrast to the circularity observed above with 'in'/'interior', seems to have independent, non-inherently-spatial implications. Thus one speaks of 'contents' (e.g. the contents of a speech), and of active 'containment' (as in 'containing the enemy forces'). This allows a broad range of uses of 'in' to be captured, as illustrated in (6) — and in Polish translation in (7):

(6)  a. the water in the glass  
     b. those in prison  
     c. in 1990  
     d. in reality  
     e. to live in poverty

(7)  a. woda w szklance  
     b. ci w więzieniu  
     c. w roku 1990  
     d. w rzeczywistości  
     e. żyć w biedzie

Of course examples like (2) – (7) are by and large well known, yet rarely have they led linguists to abandon the primacy of the spatial when explaining prepositions. Witness the titles of booklength treatments such as **Language and SPATIAL Cognition: An interdisciplinary study of the prepositions in English** (Herskovits (1986)), or **Znaczenia LOKATYWNE przyimków polskich właściwych** (Klebanowska (1971)). It is instructive to see what manoeuvres these authors must make in order to salvage what I take to be the inadequacy of straight geometry when confronted with the task of explicating prepositions.

5. In both cases the emphasis is of course mine. Translation of Klebanowska (1971): 'The locative meanings of the Polish prepositions proper'.
A standard move, made explicitly by Herskovits among others, is to switch from geometry to topology. This tack is supposed to rescue us from 'in'/'interior' circularity - and indeed it is worth exploring insofar as one of the key aims of the branch of algebraic topology known as homology theory is to rigorously explicate a notion of 'hole'. It turns out, however, that if applied reasonably literally, homology theory will often exactly reverse our linguistic notion of 'in'.

To see this, consider a sentence like the following:

(8) There is a bug (crawling) in my cup.

I dismiss as somewhat far-fetched the interpretation whereby the bug is buried in the material substance constituting the cup. In fact sentence (8) has a very clear and obvious interpretation. Now suppose we invoke homology theory and say that if the volume, area or position occupied by x coincides with (at least part of) the volume, area or position of a hole of y, then the relation 'x is in y' holds.


7. One might wonder though why precisely this particular creation of modern mathematics but apparently no others (like transfinite ordinals, Lebesgue integrals, infinite differentiability, etc.) are taken to be the basic building blocks of human cognition. In PRINCIPLE the mathematical notions in the previous sentence could be taken to explicate notions such as 'lots', 'area', and 'smooth' (respectively); in PRACTICE such a dubious move is never made.

8. Actually, herskovits is not quite as formal as this; her characterisation or 'ideal meaning' on page 149 is: 'in: inclusion of a geometric construct in a one-, two-, or three-dimensional geometric
Reasonable though this may sound, it entails that if the bug of sentence (8) is located precisely where one would locate a liquid (prior to drinking it from the cup), then the bug is NOT in the cup. If however the bug is crawling along the upper surface of the lowermost part of the handle, then the relation 'in' (as defined) does hold between bug and cup! The reason for this is that a cup is homologically equivalent to a torus (or doughnut). The 'handle-crawling location' is thereby equivalent to being inside the visible hole of a doughnut, while the 'drink location' corresponds to being located in a dent on the doughnut surface. Note that in the doughnut case, our homology theoretic version of 'in' suddenly yields quite reasonable linguistic predictions. Crucially, humans distinguish cups from doughnuts, while homology theory does not.

There is an obvious way of overcoming such difficulties - viz. to enrich one's topology with non-topological operations such as 'surgery'. Specifically, Herskovits postulates that 'in the cup' must be evaluated only after a plane has been grafted onto the rim of the relevant cup. Once this is done, our homology theoretic 'in' no longer (counterfactually) says that a bug in the 'drink location' renders sentence (8) false. Nonetheless the 'handle crawling location' problem still remains. Further, although Herskovits invokes construct'. I want to avoid 'in'/inclusion circularity.

9. Pictorial 'demonstration':

9 ————

construct'. I want to avoid 'in'/inclusion circularity.

9. Pictorial 'demonstration':

```plaintext
[Diagram of a cup and a doughnut showing homology equivalence]
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two grafting operations prior to evaluating a phrase like 'in the
tunnel', grafting planes onto handles (in effect treating them as
fore-shortened tunnels) must be disallowed, as otherwise we obtain
weird predictions about bugs being in handles. What is going on here
is in fact fairly obvious. When an object is to be viewed as a
container (e.g. as a cup with respect to drinks, or as a tunnel) one
invokes grafting. Where one does not view it as a container, there is
no grafting. But clearly this amounts to no more and no less than
introducing the notion of containment via the topological backdoor.
As mentioned above, I conjecture that the idea of containment is close
to the core of 'in'; the homology theoretic machinery is thus
epiphenomenal.

That containerhood is the relevant concept when considering the
preposition 'in' can further be established as follows. If I have a
large block of wood which is not perfectly smooth and find a drop of
water in a tiny surface indentation, then it is distinctly odd to say
that there is water in the block. However, if this piece of wood is
actually a secret explosive device triggered by a drop of water being
carefully placed in the above-mentioned configuration, then asking an
accomplice if he has put a drop of water in the block of wood is
markedly more felicitous. The difference is due to the design of the
block in the second situation as (in part) a container.

In like manner, those who advocate a geometrically based definition
of 'on' tend to end up invoking the notion of support as well. This
is generally done openly and explicitly - witness Herskovita's
1986:140) 'ideal meaning':

on: for a geometrical construct X to be contiguous with a line or surface Y; if Y is the surface of object O_y, and X is the space occupied by another object O_x, for O_y to support O_x.

Klebanowska (1971) makes a parallel move for Polish. She begins by defining locative notions with respect to a rectangular prism ("prostopadłościan") which is meant to be an idealised version of the reference object, but then enriches her mechanisms with notions like "ochrona przed spadaniem" (= support; protection from falling). Once again, I claim that the idea of support renders otiose most (if not all) of the geometric apparatus.

Why then, may we ask, do people so stubbornly cling to some kind of unshakably fundamental space-preposition correlation? Part of the answer seems to lie in the intuition (mistaken in my view) of the epistemological priority of the visual. But this is not the whole story. Jackendoff (1983), for instance, contains an extended defence of the thesis that the locational semantic field is somehow basic, and that other fields (e.g. temporal, possessional, circumstantial, etc.) are essentially parasitic on it. Evidence is adduced that lexical items from the secondary fields often exhibit the same structural relationships as items from the (primary) locational field,

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10. To borrow an analogy from N.Chomsky, this would be parallel to asserting the biological priority of the nutritional.
or a subset thereof. A theory of this sort would be plausible if the core members of the locational field manifested clear spatial integrity. The foregoing paragraphs argue that they do not.

So-called 'place-functions' (IN and ON are typical examples) play a crucial role in Jackendoff's theory of semantico-conceptual structure. Somewhat curiously (at least in his 1983 book) Jackendoff devotes only a few sentences to explicating 'in' and 'on'. With respect to the former he writes (on page 162) that the reference object must 'be regarded as a bounded area or volume'. As for 'on', mention is made of two 'senses': one involving an 'upper surface', and the other an 'outer (i.e., visible) surface'. Both prepositions are thus characterised geometrically, but when this move is made both give rise to disjunctions (which amounts to the weak homophony theory). Jackendoff concludes by referring the reader to Miller and Johnson-Laird (1976) for 'interesting discussion'. As we shall see, the latter work takes the standard tack of beginning with geometry, but then like all extended treatments finds a way of including (the crucial, in my view) non-geometric factors as well. (For instance, like both Herskovits and Klebanowska, Miller and Johnson-Laird explicitly encode the meaning of 'on' with a component predicate 'support'.) It is not obvious whether Jackendoff is satisfied with this weakening of pure geometry, but were he to accept it, he would have prima facie counterevidence to the primacy of location in human

11. I will not comment on the evolutionary speculations (totally promaturo in my view) that Jackendoff entertains based on this evidence.
3.2 CONNECTIONS WITH ASPECT

At this juncture, I should stress once again that I am trying to account for the connection between prepositional notions and aspect. My view of core prepositions can essentially be characterised as 'interactional'. Accordingly, I reject the computation of the semantics of 'the book is on the table' via latching on to a reference object (here, a table), using 'on' to identify a particular place (with respect to this table), and finally adding that a book is to be found in this particular place. Rather, I suggest that 'on' should be treated as a predicate signifying an INTERACTION\(^\text{12}\) between two arguments (here, a book and a table). The interaction in this instance can be characterised (basically) as one of support. (I find it interesting that those who begin with the former semantic computation virtually always seem to have to let in the latter as well in order to patch things up.) But if core prepositions signify interactions, they should share fundamental properties with other interaction denoting categories - the most robust exponent of which is the verb. The preceding chapters demonstrate abundantly that the

\[\text{12. The choice of this term should not be construed as implying physical 'action'. In fact, such locutions as 'the interaction between the physics department and the mathematics department' or '(significant) interaction between two (statistical) variables' show that the word 'interaction' standardly has rather abstract uses. I trust then that no confusion will arise.}\]
conceptual structure of verbs is to be analysed as organised (inter alia) along aspectual lines. Aspect seems to be a fundamental property of verbs as interaction denoting morphemes. Now if the human language faculty organises interactions along aspectual lines, then given the preceding paragraphs, we would expect prepositions to manifest aspectual behaviour as well. In particular they should partake of box and point representations. From this it follows that clear affinity between prepositional morphemes and aspectual categories (as summarised at the beginning of this chapter) is precisely what one would predict.

By way of an aside, I should make a few remarks on why I have hitherto constantly been referring to 'CORE' prepositional notions. Basically, I take core prepositions to be those that signify interactions without any intrinsic locational properties. This does not preclude the existence of other prepositions with close ties to locative concepts, and such prepositions I term 'non-core'. Non-core prepositions tend to be grammatically complex (i.e. polymorphemic): e.g. 'in front of', 'beside'. A nice contrast arises when we consider 'under' and 'below'. These have vaguely similar yet actually quite distinct meanings. A rough first approximation to the meaning of 'under' is provided by the notion of covering. On the other hand, 'below' denotes a point on a scale - one that is low(er) with

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13. Apart from obvious physical covering (as in 'under the roof'), one finds broader applications of this notion: e.g. 'XYZ falls UNDER section 3 of the constitution' = 'Section 3 of the constitution COVERS XYZ'.
respect to another. The difference can be clearly seen in the contrast between 'Put the stool under/#below the desk' and 'Put Smith below/#under Jones on your list'\(^1\) \(^4\). 'Below' in fact wears its spatial connection on its morphological sleeve. Interestingly, this contrast can be reproduced in Polish. 'Under' is the notion expressed by "pod", while to specifically translate the concept 'below' one uses "poniżej". The latter contains the morpheme "niżej", which is the comparative form of the adjective "niski" (meaning 'low'). Thus we find morphological parallelism here with respect to English and Polish. Semantic parallelism exists as well:

(9) a. Temperatura spadła poniżej zera.
   'The temperature fell below zero degrees.'

   b. *Temperatura spadła pod zero.
      *'The temperature fell under zero degrees.'

   c. cios poniżej pasa
      a blow below the belt

   d. #cios pod pasem
      #a blow under the belt

Importantly, while "pod" (under) has a corresponding homophous aspectual prefix "POD", "poniżej" (below) does not. I hypothesise that its geometric connection is too strict for it to have the freedom to function aspectually. 'Below' and "poniżej" are non-core prepositions in my terms. "Wśród" = 'within, among' (as opposed to "w"), and "powyżej" = 'above' (which contrasts with "nad") can be

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14. As in chapter 1, I use the '#' sign for sentences which require special construal.
This analysis sheds light on a striking asymmetry in the Polish aspectual prefix system. Prima facie one might expect "ZA" (cf. 'za' = 'behind') and "PRZED" (cf. 'przed' = 'in front of'/'before') to behave in parallel fashion. This is certainly not the case. As the reader may have noticed, I have discussed "ZA" fairly extensively, and given numerous examples. However not a single verb with "PRZED" has appeared up to this point. The reason for this is that Polish provides us with only two clear instances of a verb with perfectivising prefix "PRZED". (In contrast there are hundreds if not thousands with "ZA" - among which one finds borrowings and coinages.) The relevant cases are:

(10) a. PRZEDstawić  'to introduce; to present'
b. PRZEDłożyć  'to present'

Significantly, "PRZED" has a clear spatial connection - the word for 'front' is "przód". The verb roots in (10) are also spatially connected. Thus corresponding to (10a) one finds "POstawić" = 'to place in an upright position', and in parallel fashion (10b) corresponds to "POłożyć" = 'to place in a lying position'. The fact that "PRZED" has failed to sever its spatial connection is what seems

15. As regards the phonological relation between "przed" and "przód", we have already seen instances of e/o alternation (recall "nieść"/"nosić", "wieźć"/"wodzić" among the verbs of motion); the o/ó = [u] alternation is a staple of Polish phonological theory. It can be exemplified directly via "przód" = 'front' versus "do przodu" = 'to the front'.

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to lie behind its very limited distribution and its nonproductivity. Apparently it insists on associating with only explicitly locational verbs. In marked contrast, "ZA" exhibits no such co-occurrence restrictions. This clearly correlates with the fact that there is no Polish morpheme for 'back' with a shape related to "ZA". 16 "Za" is thus a core preposition and plays a central aspectual role; "przęd" is (still largely) non-core, and its aspectual role is absolutely minimal. 17

At this point I will present independent evidence for the tight connection between (core) prepositions and perfectivising prefixes from a rather surprising source, viz. children's acquisition of Polish. Smoczyńska (1985:633) reports that at the age of two years and seven months, one of her twin sons came up with a striking linguistic innovation: Hearing such prepositional phrases as "do domu" (home; to the house) and "po południu" (in the afternoon), he apparently concluded that prepositional concepts can be expressed in Polish via reduplication. Smoczyńska recorded such utterances as "ma-mamy" (for "do mamy" = 'to Mummy') and "(s)to-stole" (for "na stole" = 'on the table'). Needless to say, these innovative

16. In Polish, 'back' is "tył".

17. English also exhibits something of a back/front asymmetry. In particular 'behind' is clearly more core-like than 'in front of'. Some (American) dialects allow 'in back of', which to my ear is crashingly ungrammatical. Herskovits (1986:181) reports (U.S.) informant reactions similar in direction if not in kind. To the extent that different 'dialects' of English manifest different prepositional systems, I would expect the major differences to crop up, as here, in non-core cases.
expressions are unacceptable (and in fact totally bizarre) in adult Polish. For our purposes, what is most interesting is that this reduplicative strategy was ALSO sometimes used to bring about perfectivisation. Thus Smoczyńska reports "je-jechał" for "POjechał" or "WYjechał" (he rode/drove away). One suspects that this strategy is particularly useful insofar as Polish has no neutral all-purpose perfectivising prefix - in effect at least children's Polish does have one (viz. reduplication). The parallel treatment of prefixes and prepositions is striking.

3.3 MORE ON LOCATION

Armed with an interactional theory of (core) prepositions, we can return to the observations of Jackendoff (1983). Homology between various semantic fields does not contradict my view of prepositions - it simply means that the general organisation which the human mind imposes on interactions is reflected in whatever domain we choose our lexical items from. Nor do I disallow specifically locational terms.

18. Smoczyńska's other twin son also adopted this way of speaking. In addition, she mentions a couple other similar cases from other families (where unfortunately records were not kept). I have found a reference to this phenomenon (made briefly and essentially only in passing about a twenty-two month old boy) in Kreja (1974).

19. Smoczyńska also recorded one instance of a 'false morphological analysis': The adjective "wysoki" (tall) was rendered "so-soki". Note that Polish has a perfectivising prefix "WY" meaning 'out of', so I hypothesise that here the child was using something like 'OUT OF the ordinary' for 'tall'.

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to migrate to other semantic fields. Rather, what I disallow is
direct migration, while indirect transfer of a non-core term into the
core and then into other semantic fields is not ruled out. Finally
the fact that the physical/locative field seems to be particularly
rich is presumably a reflection in part of what humans like to talk
about, and in part of wha' linguists have lavished their attention
on. In this way, Jackendoff's observations can be accounted for even
if one abandons the thesis of locational primacy.

It is moreover striking how many standard paradoxes about
prepositions an interactional theory immediately resolves. Consider
the following chestnut. Suppose a rubbish bin is a foot away from
your desk. In such circumstances it seems reasonable to say that
there is a bin by your desk. Suppose, however, that you occupy two
adjacent offices and that your rubbish bin is in one while your desk
is in the other, the two items being separated only by a wall at most
a few inches thick. Suddenly it is distinctly odd to utter 'There's a
rubbish bin by your desk'. Geometrically this makes no sense. Under
my theory, the presence of the wall has drastically reduced the
possibility for interaction\textsuperscript{20}. In like manner, if I am standing
outside, a metre or so from the back door of your house, the 'behind'
relation holds between me and your house. If however I am standing
many metres away, and especially if a prominent landmark (e.g. a

\begin{footnotesize}
\begin{itemize}
\item[20.] Where interaction between two artifacts may well be interpreted as
the opportunity for simultaneous use by a user, or as the opportunity
for interaction between the user of one and the user of the other.
\end{itemize}
\end{footnotesize}
building) is to be found between me your back door, then the acceptability of 'I am standing behind your house' is greatly reduced. This makes sense, since the possibility of interaction has been reduced, even though (completely irrelevantly) the basic geometric relations between me and your house are unaltered.

As Klebanowska (1971) notes, these observations hold for Polish as well. This is as we would expect if core prepositional notions are largely innately built into our linguistic faculties.

Consider next the putting of flowers into a vase. Here it is sufficient (indeed normal) for only (part of) their stems to be in what I earlier referred to as the 'drink location' of the vase. With 'in' analysed via 'containment' this is natural given that the flowers are viewed as contents of the vase. On the other hand, 'inclusion' theories seem to need to be weakened so as to allow partial inclusion. But this weakening is self-defeating. Consider a person sitting on a stool by a bathtub, his feet in the water. To say that this person is in the tub is distinctly odd, yet partial inclusion clearly holds. By way of contrast, note that standard notions of 'containment' fail in the tub situation, thus straightforwardly accounting for the linguistic judgments concerning 'in'. Parallel facts hold for Polish, as we should expect.

21. The fact that such grotesque circumlocutions are apparently needed to convey canonical positional concepts can be construed as further evidence against geometric primacy.
A particularly striking piece of confirmatory evidence for an interactional view of core prepositions is provided by Herskovits. Suppose that my pet cat places its paw on your rug. One thing you might say by way of reaction is 'Why is that cat on my rug!' Another, assuming you are a cat-lover who likes to see to it that they are always warm, comfortable and asleep on a rug, is 'Why isn't your cat on my rug?' Naturally, there is no contradiction despite these opposite reactions to the same geometrical configuration. Quite simply, in the first case the slightest contact between paw and rug counts in your mind as interaction (which we would expect if you do not like your rug to be soiled by animals); in the second case such a token interaction would not even merit being conceived of as the genuine article.

I will limit myself to one final paradox - a classic reported in Miller and Johnson-Laird (1976) and attributed to W. James. Consider a man facing a tree and suspecting that a squirrel is clinging to the trunk on the other side. Trying to catch sight of the animal, the man makes one step to the right, but the clever squirrel compensates by moving slightly, so that the tree trunk still stands between it and the man. The process continues until the man has circled the tree several times (though of course he never sees the squirrel). The question that arises is whether or not the man has gone AROUND the squirrel. To account for our intuitive answer of 'yes and no', James proposed the following solution (cited apparently approvingly by Miller and Johnson-Laird): it all depends on one’s choice of co-ordinate system. If by going around we mean first being (say)
north, then east, then south, then west, and then north again, then
the man has gone around the squirrel. If on the other hand we mean
first being in front of it, then to its right, then behind it, then to
its left, and finally in front again, then the answer to our question
is no. Hence, since the choice of co-ordinate system is not a priori
fixed, we have a paradox.

I contend that James's alleged solution does not work. The easiest
way to see this is to realise that it imposes no asymmetry on the
squirrel-man relation. Thus the 'yes and no' answer applies equally
well to the question of whether or not the squirrel has gone around
the man. Here my intuitive response is to say definitely no. Thus
graphy fails again.

One can however get a handle on this problem by considering what
mathematicians refer to as limiting cases. If the tree trunk is
shrunk to diameter zero, then we would say the man has gone around the
squirrel (even if, to keep all else equal, the squirrel turns around
while the man circles it). On the other hand, if the tree trunk is
expanded so that its diameter is equal to the diameter of the circle
traced out by the man, then to the question of whether the man has
gone around the squirrel one would reply definitely no. In a sense
the paradox arises because these two limiting cases are conflated. To
see why, let us construe the situation in interactional terms.
Suppose that 'around' is a kind of converse to the containment
relation expressed by 'in'. Then aroundness holds of the first limiting case in much the same way as an army can contain an enemy by surrounding it. Containment, however, fails when an interaction is viewed as chasing, presumably simply because one has not yet contained an opponent whom one is chasing. Chasing is clearly what occurs in limiting scenario number two. Now because in James's puzzle it is not clear whether the man is chasing the squirrel, it is accordingly not clear whether the interaction between man and squirrel is chasing or not, and thus whether it is not or it is (respectively) describable by 'around'. Hence the paradox.

I might point out that under a certain reading of Miller and Johnson-Laird's theory, the interactional nature of apparently locative expressions can be seen to shine through the geometric epicycles. I make this claim because of the fundamental role played in the cited work by the predicate REGION(x). Miller and Johnson-Laird (1976:388) explain it thus:

To say "x at y" is to say x is included in the region of y, that is, x is WHERE IT CAN INTERACT with y socially, physically, or in whatever way

22. There is a certain affinity between 'around' and 'about' - hence the collocation 'around about'. Now note that if x is among the CONTENTS of a certain book, then x is IN my book, and my book is ABOUT x. Somewhat similar observations can be made about the preposition "o" and the prefix "0" in Polish.

23. I.e. the question is the man chasing the squirrel gets the same 'yes and no' answer.
x's conventionally interact with y's

It is precisely my proposal to highlight the interactional component of 'regions of interaction', and to abandon the excess geometrical baggage (at least for core prepositions). As shown above, it is the notion of interaction that tends to do the real explanatory work.

To this point I have actually made no explicit proposal for characterising 'at' in my theory. The primary reason for this is that Polish has no direct equivalent, which means that it is natural to treat 'at' under the rubric of language variation. My hypothesis concerning 'at' is that it signifies an interaction in which both arguments function autonomously, and which the first argument initiates. The first clause is designed to exclude such situations as explicit support or explicit containment, while the second clause handles the 'x at y' versus 'y at x' asymmetry. I view my characterisation as superior to that of Herskovits (1986:128) where 'at' has the following 'ideal meaning': 'for a point to coincide with another'. The reason is that this coincidence relation must then immediately be relaxed via a mechanism referred to as 'tolerance' so as to allow only approximate coincidence. This is the way Herskovits deals with 'the man at the desk' and 'the woman at the window' (which in my terms are simply autonomous interactions). Notice now that

24. Emphasis mine. Note that Miller and Johnson-Laird subsequently modify this definition of 'at' in order to account for the asymmetry between its arguments.

25. I.e. the non-prepositional-object argument
Herskovits must allow strict coincidence to be violated by several inches if I am at the desk, while a separation (via floating) of rather fewer inches would seriously disturb a relation such as my being on the floor. Such examples can easily be multiplied.

My characterisation of 'at' nicely handles contrasts such as someone being at a typewriter versus someone being (*) at a pen. Since the inner workings of a typewriter (especially an electric one) are to a large extent independent of its external interactions with a typist, autonomous behaviour is possible in a way which is basically inconceivable for a pen (which simply goes wherever it is pushed, while happening to leave behind a trail). Consider too the contrast of a lady being at the hospital and one being in the hospital. The latter standardly implies hospitalisation (although other forms of containment such as a thief being in the building in order to steal medical supplies work equally well). The former, however, mandates autonomous interaction, hence standard implications of either working at the hospital or visiting it.

Herskovits makes much of sentences like 'June is at the supermarket', which seems to require that either the speaker or hearer (or both) not be in the vicinity of the retail outlet in question. This distancing is taken as support for interpreting the supermarket as a point (as required by her punctual coincidence characterisation of 'at'). For me, this distance effect is basically what licenses the viewing of the supermarket as an entity which is interacting...
autonomously with (potential) customers.26

The fact that Polish has no exact equivalent of 'at' means that that language does not capture distinctions of this type. Polish is however (perhaps by way of compensation) acutely sensitive to the difference between what would be translated (literally) as being in and being on a location. The fact that one must say "w szkole" (= in/at school (literally: in))27, while one prefers "na uniwersytecie" (= at the university (literally: on)) is, I take it, a reflection of the fact that school systems are construable as attempting to (almost literally) contain their clientele (the pupils), while universities are more naturally seen as supporting scholars. A nice contrast in interpretation is illustrated by the phrases "w mieście" and (the quite colloquial) "na mieście". The former is fairly neutral (cf. 'in town'), while the latter seems to explicitly deny containment, thus making it felicitous for shopping trips, or walking the streets, but not for inhabiting or working in the city.

I suspect that English makes use of a somewhat similar opposition in contrasts like being 'on the faculty' versus being 'in a department'. In principle at least, the former is designed to support, and the latter to contain. Likewise a sportsman plays on a team, but in such

26. Thus if both speaker and hearer are standing within its walls they see that the supermarket itself just stands there (its workings being carried out rather by employees), thus rendering autonomy in interaction with it improbable.

27. "Na szkole" implies being on the roof of the school.
and such a league.

Polish has extended this "w"/"na" contrast to apply to geographical areas. Thus for central regions of Poland one must use "w" (e.g. "w Małopolsce", "w Wielkopolsce"), while for outlying provinces (and for countries viewable as outlying provinces by virtue of emotional or other connection) one either can or must use "na". Examples are: "na Pomorzu" (= in Pomerania), "na Podhalu", "na Litwie" (= in Lithuania), "na Rusi" (= in Russia-proper)\(^{28}\), "na Węgrzech" (= in Hungary). The logic here seems to be that being in a central province or in a city constrains one's movements or interactions in a way that being in a farflung outlying province does not. To get to such faraway places one needs a certain degree of freedom (hence non-containment) for travelling; upon arrival, such places offer (perhaps minimal) peripatetic support. As might be anticipated for languages which are not wedded to any specific partitioning of the globe into central/farflung, English does not make use of an 'in'/'on' distinction here, except I suspect for phrases like 'a town on the border'.

Polish also exhibits a strong tendency to use "na" with respect to islands,\(^{29}\) even to the extent of using "na Hawajach" (= in Hawaii

\[\text{--------------------------}\]

\(^{28}\) Compare "w /*na Rosji" = 'in Russia'; "w /*na Związku Radzieckim" = 'in the Soviet Union'.

\(^{29}\) This is possible in English too (witness 'on a desert isle'). Note that Polish generally switches to "w" if the island in question is also a country: see Westfal (1936), Awdiejew (1977) for further discussion.
One might wonder whether small islands should not more felicitously occur with "w" = 'in', since they obviously contain their inhabitants (in terms of freedom of motion, say) rather drastically. I contend that given the dangers of the high seas, the support (and concomitant safety from drowning) that islands offer is far more salient than any containment effect - hence "na".

A particularly striking array of facts concerning "w" / "na" selection is to be found in the speech of many Poles in the émigré community of my home town of Melbourne (Australia). As is standard, when various suburbs of Melbourne are talked about, one uses "w". English speakers will likewise say 'in Footscray', 'in Dandenong', 'in Brunswick', 'in Brighton', 'in Carlton', and so forth. The relevant variety of Polish, however, allows two exceptions: Richmond and Essendon. In these cases one often hears "na", as in "na Essendon(ie)" and "na Richmond(zie)". I might add that Richmond is centrally located, and Essendon is reasonably so as well. The explanation for what seems at first to be a curious idiosyncrasy is obvious to anyone familiar with the post World War II social history of Poles in Melbourne. The relevant fact is that Richmond and Essendon have long functioned as religious and cultural resource centres for the Polish community. Thus, in the relevant dialect, most suburbs are treated quite neutrally (whence "w"), but Richmond and Essendon are associated with rather unique connotations of support.

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30. This is not the 'farflung province' effect of the previous paragraph - witness "w Alasce" = 'in Alaska'.
I should point out that while quite common, this usage is not universal. It is however recorded in print, for instance in a biography listed in the bibliography as Grzebien (1986). To my mind, data like the above provide strong support for an interactional view of prepositions, given that the relevant choices cannot be accounted for geometrically. Further, the fact that I am describing a post World War II phenomenon shows that the factors in question are alive in the language. The issue of preposition choice cannot be relegated to the study of frozen forms and of brute force memorisation.

I might add that one clear benefit of the approach to prepositions that I am advocating is that one can thereby dispense with dimensional disjunctions. Thus for the English preposition 'in' (or for Polish "w") we need not stipulate that EITHER two dimensions can be relevant (eg. 'the point in the box', 'the toy in the window') OR three (as in 'the toy in the box'). In all of the cited examples containment clearly holds, hence the choice of 'in'. I view this benefit as non-trivial, since disjunctions in preposition characterisation amount to the weakest theory possible - viz. homophony.

31 Here one finds "na Essendon" (p.43), "na Richmond" (pp.43,59), and "na Essendonie" (pp.55,72,76). Note that although he uses the relevant forms, Grzebien is not a 'native speaker' of the dialect in question; crucially however he does cite the relevant choice of preposition from the correspondence of persons who would fall under this rubric. It seems that Grzebien only visited Melbourne, but was nonetheless 'infected' by the usage in question. This does not always happen: a one-time visitor who consistently seems to use "w" when writing of Essendon and of Richmond is Skwarnicki - see Skwarnicki (1987:80) for instance.
Given that both verbs and prepositions count as interaction-denoters, one might ask why two separate syntactic categories are set up instead of one. An examination of the details of some interactions sheds light on this question. If A is on B, then according to the foregoing A is supported by B. If A is in B then A is contained by B. If A is under B then A is covered by B. The systematic appearance of passives here is striking. If verbs cannot have basically passive meanings (perhaps for acquisitional reasons), then the need for the availability of a separate interaction-denoting category emerges.

3.4 EXTENSIONS

The foregoing discussion is meant to render plausible an interactional theory of (at least a few) core prepositions. Needless to say, it is not comprehensive - limitations of space and time preclude this. Furthermore, at the relevant points in the discussion I explicitly noted that my characterisations of 'in', 'at' and 'on' are to be taken as first approximations. The reason for this is the existence of apparent counterexamples in the extensive literature on the topic of locative notions. Obviously I will not attempt to give anything like a final solution here. Rather, in this section I intend to sketch out a direction in which one might look for better (though no doubt still approximate) solutions.

Consider a phrase like the following:
Certainly one can imagine situations in which a leash physically supports a dog (e.g. if the animal is in a hanging position). Yet (11) has a natural (and in fact most salient) interpretation under which the relevant portion of the leash is simply located around the neck of the dog. Can this be explicated by a notion of support? One might be tempted to dismiss (11) as an idiosyncratic idiom, but we should not be too hasty when making such moves. In particular, in this case I suspect the idiom solution may be untenable given what Polish exhibits similar expressions:

(12) pies na smyczy
    'a dog on a leash'

    pies na ląncuchu
    'a dog on a chain'

Coincidences may happen, but it would clearly be preferable to attempt to invoke more principled considerations when discussing the confluence of (11) and (12). Data of this sort force us to contemplate better approximations to the proposed characterisation of 'on'.

One move that we can imagine under these circumstances is to begin by recalling that the characterisation of 'at' included the notion of

32. Needless to say, theories that accept geometric primacy face problems here as well. The solution of Herskovits (1986:144) simply proposes yet another 'use type' (a kind of attachment) for 'on'; as far as I can see this amounts essentially to the weak homophony theory.
autonomous interaction. Conceivably then we could say that 'in'
signifies an interaction in which there is a loss of autonomy, 'on'
one in which there is a gain, while 'at' is neutral. Such a proposal
has the merit of nicely relating three core prepositional notions; all
the same I suspect that this is a dangerous move to make. For a
start, it appears to render our proposed meanings much more vague,
especially given the absence of independent tests for the concept of
amount of autonomy. Further we appear to lose a significant amount of
predictive power: Suppose 'in' basically implies 'disabling', and 'on'
'enabling'; what happens when these two notions are intrinsically
intertwined? According to at least some criminological theories, one
incarcerates people in order to rehabilitate them and so to free them
from criminal habits - more simply, one enables via disabling. Why
then must one speak of people in prison and not (*) on prison?
Puzzles of this nature suggest that a characterisation of 'in'/''on'
simply in terms of amount of autonomy is likely to be too broad to be
useful.

All the same; the essence of the enabling/disabling proposal may
contain some important insights. (In fact, I suspect its effects
should be derived from whatever meaning for 'in'/''on' one comes up
with.) Returning to our earlier explanation of 'on' in terms of
support, it may be worth asking ourselves what it is that constitutes
support. Physically, one thinks of protection from the effects of
that mysterious phenomenon we call gravity. Insofar as the human
language faculty makes computations about gravity, it is plausible
that it treats it much like any other external force.
Polish might possibly provide us with evidence that the prepositional notion 'on' (i.e. "na") crucially deals with external forces. Thus in Polish we find sentences like:

(13) a. Siedzi na słońcu.
    'He's sitting in the sun.' 33
    on

    b. Nie wychodź na wiatr.
    'Don't go out in the wind.'

English insists on 'in' in these contexts, and to some extent Polish also allows (though disfavours) "w". I suspect there is a good reason for the Polish-English asymmetry that (13) exemplifies — in particular I would like to tie it to the asymmetry shown in (14):

(14) a. Jest im _gorąco._
    they:DAT
    'They are hot.'

    b. Jest ci _zimno._
    you:DAT
    'You're cold.'

Polish appears to treat temperature effects as the result of external forces impinging on humans, rather than as properties of people (which is what English does). Syntactically this would be represented by the presence of quasi-argumental (cf. Chomsky (1981)) pro in the subject position in (14a,b) triggering third person singular agreement on the verb. Given that Polish constructs temperature/meteorological effects

33. I am of course disregarding the (nonsensical) reading that implies travel to the sun.
as resulting from external forces, and given that "na" also deals with (counteracting) external forces, we are led to expect a correlation here - in particular the one illustrated in (13). Thus in (13a), the sun is counteracting the external force that makes one feel cold(er) (cf. (14b)). However, since English resists the external force interpretation of temperature effects in humans, that language will have to revert to 'in' when translating (13).

We are thus led to construe 'y on x' as y being supported via x controlling some external force impinging on y. Such a characterisation renders (11) much less mysterious. Assuming, as is natural, that dogs are easily distracted by external stimuli, the leash of (11) helps to counteract the effects of externally initiated distractions, thus supporting the dog in what it is or should be doing. Under such a construal, (11) and its Polish equivalents are no longer flat out counterexamples to my theory.

Gravity is plausibly treated universally as an external force. Other such forces may be motivated on a more language particular, even sociological basis (as in the discussion of Richmond and Essendon). The net result of this is a certain amount of variation among languages. Consider a sentence like the following:

(15) I own a house on Tremont Street.

Discounting nonsensical readings, one might wonder why a house that is not on the street can be on Tremont Street. Note incidentally that Polish standardly uses "przy" (= near) in these circumstances. One
solution to this puzzle that seems not to work is the hypothesis that streets in English are wider than streets in Polish, in the sense that they encompass real estate on both sides of the actual road surface. This just yields further paradoxes - e.g. why I am not standing on Tremont Street when I am standing inside my house, or on the steps outside my front door. Instead, what I suspect is relevant is that a street is crucial to the (modern) sociological support of the houses that line it, governing such factors as access and traffic. This is what motivates 'on' in (15).34

English also exhibits a curious contrast between getting into a car but onto a bus. As has been noted in the literature (e.g. Herskovits (1986)), the explanation here seems to have something to do with major modes of public transportation.35 In geometrical terms this is an irresoluble puzzle. Under my theory, public transportation can be mentally encoded as part of the sociological support structure - we rely on it to counter the mysterious external forces that would prevent us from getting from A to B. Thus a society with a well-developed notion of public transportation can be expected to potentially exhibit 'on' in uses like 'on the bus'. However there is nothing in the human mind inherently forcing this association of 'on'

34. A parallel explanation may well hold of real estate agent jargon like 'a house on a lake' (where the residence is on the waterfront, not in the water).

35. Cf. getting on a plane, or on a ship, but in a taxi.
and (say) 'bus'\(^{36}\), which leads us to expect variation across languages in this respect. Such variation is indeed what one finds.

Whereas I take 'on' to signify support via control of external forces, I suggest that the containment notion of 'in' may stem from control of internal forces, tendencies and freedoms. This makes sense for phrases like 'in prison'; furthermore it may well shed light on sentences like the following:

(16) a. There's a crack in the bowl.
   b. There's a hole in the wall.

The puzzle here is that if 'in' relates two objects, exactly what kind of an object is a crack or a hole. Herskovits (1986:42) refers to them as "negative parts", but this makes them no less mysterious. I would like to suggest that cracks, holes, etc. are taken to be objects (insofar as they are taken to be objects) which are the results of certain kinds of events. Such events are typically destructive. Now given that their destructive effects can be limited or contained (much as enemy forces can be contained), the preposition 'in' is licensable. Specifically, in (16a) I interpret the bowl as limiting or containing the inner make-up of the crack (by which I mean the event that is taken to cause it). In this way, a notion of containment that focuses on interior forces seems to be a fruitful tack to take when exploring 'in'.

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36. As Herskovits notes, a family inhabiting a de-commissioned bus lives in (not on) that bus.
3.5 ASPECT REVISITED

The foregoing investigation led us rather deeply into some of the intricacies of prepositional characterisation. We should not forget however that our main motivation is to elucidate the connection between prepositions and aspect. My basic argument is that if prepositions can be successfully analysed in interactional terms, then they should exhibit the key properties that the human mind imposes on interactions (as evidenced by the properties of other interaction-denoting categories, like verbs). Among such imposed properties are I claim the organising principles that analyse events in aspectual terms. Thus if prepositions signify interactions, they should have aspectual properties as well.

In terms of the theory outlined in chapters 1 and 2, aspectual properties are expressed via box and point representations. The prepositions 'in', 'at' and 'on' are essentially stative and have no inbuilt climax. Consequently their aspectual representations will contain no visible points. By a process of elimination, and invoking standard parsimony considerations, one can see that the only available representation will be a simple box. Recall that boxwise behaviour is

37. Variants of this proposal have been advocated for quite a while witness the title (Prepositions as Predicates) of Becker and Arms (1969) (although I should add that this article has a traditional 'locationist' flavour).
associated with imperfectivity. As mentioned at the start of this chapter, this affinity between 'in'-'at'-'on' and imperfective aspect is one of the fundamental observations of Hale (1985).

Some justification for my proposed representation of 'at' can be found in English conatives such as the following: 39

(17) a. The girl cut (away) at the bread.
    b. The boy hit at the wall.

Both (17a) and (17b) are imperfectives, and in this they differ from expressions like 'cut the loaf' and 'hit the ball'. Formally, the proposed reason for this imperfectivity is the lack of a direct object to identify a distinguished point, coupled with the lack of a prepositional phrase with the power to perform this identification. The latter fact follows from the theory in that 'at' will not have a distinguished point in its aspectual representation. Note that my characterisation of 'at' in terms of interactions respecting autonomy fits in nicely with the fact that, in (17b) for instance, the wall in question may never actually get hit (or if it does, such hitting is construed as not affecting it).

38. Warlpiri expresses all three via a single morpheme - an archi-prepositional concept perhaps.

39. Examples like these are discussed in Levin (1985), Laughren, Levin and Rappaport (1986), and Pinker (1989). In my dialect some of these sentences tend to be better than others (in absolute terms); interestingly American linguists talk about them without such qualifications.
The English progressive construction also deserves mentioning in this regard. Although the details of the matter are not entirely settled, it is generally accepted that a sentence such as 'I was hunting' has historical antecedents of the form 'I was a-hunting', where 'a-' comes from 'at' or 'on'. Given the representation of these prepositions as simple boxes, some light is shed on the historical roots of the closest that Modern English has come to a general imperfectivisation process. This development is somewhat more morphologically transparent in the Celtic languages. The following examples are from Modern Irish:

(18) a. Tá sé ag obair.
   is he at work.(verbal noun)
   'He is working.'

   b. Tá sé ag dúnadh an dorais.
   is he at open.(verbal noun) the door
   'He is opening the door.'

Synchronically this construction is described as a progressive (Comrie (1976:99)). Welsh has a similar construction.

Not all prepositions will correspond to plain boxes. Thus 'at' will contrast rather minimally with 'to', which I represent as a box containing a distinguished point. I take this to be natural given that a prepositional phrase headed by 'to' denotes a climax. Consequently, in a sentence like 'She ran to the store', the verb (which the reader will recall from section 1.8 is lexically

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40. See Brinton (1988) footnote 17 on page 267 for a summary and for references.
represented in underspecified terms as just a point) will be able to
have its distinguished point identified, and so interpreted. This
will happen in spite of there being no direct object (cf. 'He ran a
mile.' ) because the prepositional phrase with its well-defined
distinguished point (identified by its object) merges in aspectual
representation with the verb. Upon merger a single point (in a box)
results. This point is semantically interpretable. Hence we have a
well-formed aspectual structure, and indeed one that encodes
perfectivity, as required.

The characterisation of 'to' that I propose is the end phase of one
interaction being associated with (the start of) another interaction.
In terms of the example in the previous paragraph, the first
interaction is that of running, while the second is a human
interacting with a store. One might think of our two formal pieces of
notation as corresponding to these two semantic components: the box to
the running and the point to the arrival. Note that aspectual
representations cannot encode temporal precedence; lexical items,
however, can contain such information. 'To' does so insofar as it
necessarily focuses on an end phase.

I interpret the fact that there are American Indian languages where
what English speakers think of as the verb 'go' is expressed as an
inflected form of a morpheme we can gloss as 'to' as evidence for this
approach. The following examples are from Hopi ((a) shows
incorporation; (b) does not — see Jeanne (1978) for further examples
and discussion):
Given my representation of 'in' as a box and my representation of 'to' as a point in a box, a natural proposal emerges concerning forms like 'into'. We have already had reason to invoke merger of aspectual structures. Making use of this operation with 'in' and 'to' as inputs, 'into' is predicted to behave as a point in a box (i.e. analogously to 'to'). This is indeed the case, as sentences like 'He ran into the room' testify. 'Onto' will of course be handled in the same fashion.

In Polish, the 'on'/'onto' distinction is expressed via Case alternation. Thus "na" plus an object in what is called locative Case will be translated as 'on'; the 'onto' reading mandates accusative Case.41 We now have an interesting parallel between the ways in which 'on'/'na" can be converted into 'onto' and the ways in which an English verb like 'run' can acquire perfectivity. Recall that the mechanisms for the latter are either co-occurrence with a direct object or merger with an appropriate (e.g. 'to'-headed) PP. When converting "na" (= on) to "na" (= onto) Polish makes use of the first option, viz. that of a structurally Case-marked (accusative) direct object.

41. Cf. Latin: 'In muro ambulat' versus 'In atrium ambulat' (respectively). Glosses: 'He is walking on the wall' vs. 'He is walking into the atrium'.
object. English on the other hand uses merger to identify the distinguished point of both 'run to the store' and 'into the store'.

One might wonder why (modulo habituals) 'to the store' obligatorily perfectivises verbs like 'walk' in English, whereas Polish allows the following contrast:

(20) a. Szedł do sklepu. (imperfective) 'He was walking to the store.'
    b. Wszedł do sklepu. (perfective) 'He entered the store.'

My solution involves economy principles. Recall that lexically 'walk' is a box in Polish but a single point in English. (This difference arises from the fact that Polish has mechanisms for introducing points derivationally whereas English does not; thus English must store the relevant points in the lexicon.) Now note that 'walk' in Polish has a well-formed aspectual structure already in the lexicon, in contrast to English. This means that Polish IS NOT FORCED to employ any additional operations on its representation of "szedł" (as in (20a)), although of course explicit addition of extra morphological material (as in (20b)) can trigger further derivation. English on the other hand MUST manipulate its representation of 'walk' (= a single point) in order to produce an aspectually well-formed structure, with distinguished point semantically interpreted. Merger will certainly do the trick. If both merger and direct object routes are unavailable, English must resort to the only aspectual operation that remains, viz. reduplication. This yields activity readings. Since there is no overt licensing morphology to trigger this reduplication,
I take it to be costly. In English then reduplication is a last resort, so that merger takes place when possible.

An interesting question is whether the relation between Polish prepositions and prefixes should be handled via preposition incorporation (in the sense of Baker (1988) and references therein). The plausibility of this suggestion derives from data like the following:

(21) **DOszedł do nas.**
    'He walked up to where we were.'

    **ODszedł od nas.**
    'He walked away from us.'

    **ZEszedł z dachu.**
    'He came down from the roof.'

    **ZAszedł za dom.**
    'He walked behind (= to behind) the house.'

Of course simply invoking head movement of a preposition here is insufficient; one must also appeal to further operations of copying (or spelling out traces, say). What makes this kind of analysis implausible is the existence of scores of verbs not tolerating a following PP (à la (21)), as well as numerous cases where a PP is tolerated (or even needed) but where prefix and preposition differ:

(22) **POszedł do domu.**
    'He went home.'

    **PRZYSszedł do domu.**
    'He came home.'

    **Wszedł do domu.**
    'He entered the/our house.'
There are in fact cases in which such disagreement is mandatory. Thus (*) "PRZYSZEDł przy domu" is inconceivable. In a somewhat similar manner, "Wyszédl" greatly prefers a PP headed by "do"; "w" (when possible) requires a rather special reading.

An interactional theory of prepositional notions does not face obvious problems here, and may even shed light on some rather puzzling contrasts:

(23)  a. Wyszédl na dach.
      'He climbed onto the roof.'

       b. WYSZEDł na dach.

(24)  a. Wyszédl na scenę.
      'He walked onto the stage.'

       b. WYSZEDł na scenę.

(25)  a. Wlazł na drzewo.
      'He climbed up the tree.'

       b. Wlazł na drzewo.

To express what (23)-(25) signify one must employ prepositions and prefixes that 'disagree'. Further the (a) and (b) sentences are not exactly synonymous: The (a) sentences are fairly neutral and express something that we might expect of the subject; the (b) sentences,
however, indicate that something unusual or unexpected has happened. (I deliberately included several different examples in (23)-(25) to show that we are not dealing here with an odd memorised idiom or two.) My suspicion is that this systematic contrast should be viewed from an interactional point of view. The prefix "WY" has an affinity for the preposition "z" (which can be used to express the notion 'out of'). The relevant interaction here is that of escape - so that the subject of the (b) sentences above escapes what is usual or expected. In the (a) sentences on the other hand the subject conforms to and is thus contained by our expectations. This is consistent with our characterisation of 'in' via containment. Finally, I might mention that "NAszedź na dach" cannot mean 'He climbed onto the roof'. In fact, the verb "NAjść" has a rather restricted meaning: one of attack or confrontation.42 This actually ties in well with our explanation of 'on' as an interaction counteracting external forces: "NAjść" actually presupposes external resistance. The fact that we can make sense of such facts is naturally viewable as support for my theory.

Before concluding, I will briefly mention a few instances where perfectivising prefixes apparently transitivise verbs that host them. We have seen that the prefix "DO" typically co-occurs with a PP headed by "do" (= to). One exception to this is a sentence like "Lato DObiega końca" = 'Summer is coming to an end'. Since this pattern is highly atypical for "DO", I take "DObiegać" to be a special lexical

42. I am abstracting away from accumulative "NA" here.
item, memorised by brute force. Such a move is probably necessary anyway in order to correctly assign genitive Case to the object (here: "koniec" = 'end'), a Case that "biegać" does not independently assign.

(Partially) productive transitivisation appears to occur only with "WY" (with non-"verbs of motion"), and with "PRZE". With respect to "WY" we find:

(26) WYkpilámy żebraka.
'Ve we mocked the beggar.'

cf. * Kpiliámy żebraka.

WYsmialiámy kolegę.
'Ve made fun of our colleague.'

cf. * Smialiámy kolegę.

Wymysliň to.
'He thought that up.'

cf. * Myśliň to.

Wczoraj to WYGadai.
'Yesterday his utterance caused that to happen.'

cf. * Wczoraj to gadaň.

The reader will recall that "WY" has no homophonous prepositional counterpart. With verbs of motion, "WY" likes to associate with PPs headed by "z" (= out of, off of). This mode of identification of the distinguished point introduced by "WY" is not readily available for non-"verbs of motion", so that identification via a direct object (cf. English 'run a mile') is resorted to.

"PRZE" behaves still differently - the corresponding preposition
"przez" is often optional:

(27) PRZEsłoczył (przez) płot.
    'He jumped over the fence.'

PRZEszedł (przez) cały kraj.
    'He walked from one end of the country to the other.'

PRZEbiegł (przez) pole.
    'He ran across the field.'

One is tempted to say that "PRZE" licenses transitivisation because it is not EXACTLY homophonous with "przez" (cf. "WY"). Of course the transitivisation in (27) is reminiscent of similar effects in English:

(28) We jumped (over) the fence.
    We walked (over) the bridge.

This suggests that once the "PRZE"-"przez" link is (optionally) broken, universal principles are doing the rest of the work. It is interesting to note that Polish "PRZE" and English 'over' share properties in addition to those just illustrated. Thus other can be used to express a notion of excess:

(29) overgeneralise
    overstate
    overestimate

PRZEsolić = 'to salt too much'
PRZEcenić = 'to overestimate'

What may be at stake here is the rather neutral meaning of "PRZE". It is not quite as neutral as "Z" (with its measuring out interpretation). Rather it seems to involve measuring out, plus a lower bound. Thus in jumping a fence, one must jump AT LEAST as high
as the HEIGHT of the fence. "PRZeskoczyć" in (27) works similarly.
Likewise, to oversalt is to exceed a certain gradually attainable
bound by some amount; this holds of "PRZEsolić" as well. The direct
object serves to establish the relevant lower bound.
In this chapter I will develop a number of applications of the theory I have proposed. The theory was designed first and foremost to handle the problem of verbal aspect in Polish. Here I wish to expand its frontier of applicability by showing that a theory of Slavic aspect can have important implications outside of Slavic and outside of what is normally viewed to be aspectual. I will begin by considering diathesis in English - in particular the double object construction. I will then turn to consider the behaviour of certain classes of verbs in Georgian as well as a couple other phenomena in English.

4.1 THE DATIVE ALTERNATION
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The English dative alternation, that between 'giving a friend a book' and 'giving a book to a friend' has long been a problem for linguistic theory. It has inspired books, articles and theses, and
continues to do so. One of the fundamental puzzles addressed by much of this literature is the delineation of those verbs or classes of verbs which allow this alternation and which sanction the double object configuration. One would like to do this in as principled a manner as possible.

The importance of this problem can straightforwardly be appreciated by looking at it from an acquisitional perspective. Thus inspired by Baker's 1979 article entitled 'Syntactic theory and the projection problem', Pinker (1989) formulates what he refers to as 'Baker's paradox' along the following lines: First, language learning is PRODUCTIVE in the sense that children do not simply parrot back what they hear in strictly conservative fashion. Second, in line with much current research, one can assume that the acquisition process makes use of NO NEGATIVE EVIDENCE. Third, children nonetheless manage to 'correctly' acquire what look like ARBITRARY distinctions. To accept all three assumptions is to court contradiction; hence (at least) one must be given up. Pinker proposes that we abandon the third and accordingly presents an extensive defence. More concretely, he examines the dative, locative, causative, and passive alternations

1. Empirical support for this position in the specific domain of dativisation is provided by Gropen, Pinker, Hollander, Goldberg and Wilson (1989), where the use by children of invented verbs (like 'tonk' or 'floose') in the double object construction is specifically tested for in an experimental setting.

and concludes in each case that whether or not any particular verb is an alternator is not just an arbitrary fact that must be memorised, and so can be acquired by learners who are not strictly conservative and who nonetheless receive no negative evidence. I shall examine Pinker's solution shortly. In particular I will suggest that with respect to the double object construction, identifying the class(es) of alternating verbs can be done with significantly less arbitrariness than even Pinker thinks is necessary if aspectual considerations are given more weight.

Before launching into the details, a few words are in order on the nature of the data we are dealing with. At issue are such contrasts as:

(1) Al gave Bert a book.
(2) * Cindy donated the library a book.
(3) Danny told Elisabeth the answer.
(4) * Fred yelled George the question.
(5) Harry threw Iggy the ball.
(6) * Jenny carried Kim the dictionary.

I have presented the contrasts as a binary distinction, annotated by star versus no star. One should bear in mind that this is an idealisation, as there actually seem to be a number of subtleties involved. (Some of these will be addressed in what follows.) Thus even a cursory glance at the published literature shows a fair measure of disagreement concerning exactly which verbs are 'dative-possible'. Among the works I have examined, Green (1974) is far and away the most...
permissive in this regard. Pinker (1989) is considerably more conservative, and Grimshaw (1989) tends to agree with him. Oehrle (1976) occupies a middle position. In some respects, it may be surprising to see such a level of disagreement among professional linguists about something that 'children learning English correctly acquire'. I suspect however that once a number of subtleties (like a distinction between forced and non-forced readings) are taken into account, then the level of basic agreement increases considerably. My own judgments about fully natural 'dativisable' verbs are at times even more conservative than Pinker's, but as already mentioned, polarising the data into dativisable/non-dativisable is only a first order approximation to a fuller characterisation.

PINKER'S THEORY

Given that it is reasonably explicitly formulated, the theory of dativisability presented in Pinker (1989) is a useful starting point for our investigation. I will outline and then comment on Pinker's system. Doing this will provide us with the benefit of an examination and preliminary classification of the relevant data.

To keep this sub-section within reasonable bounds I will focus on 'to'-datives.³ Examples are given in (1), (3) and (5) above. Pinker accounts for cases like these with a two stage theory. At one level we have the following 'broad range dative rule' applying on

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³ 'For'-datives present additional problems, not all of which I will claim to have solved.
Verbs with representations nothing like the input in (7) (e.g. by virtue of taking fewer than three arguments) will fail to alternate. For verbs with representations approximately equal to the input in (7), whether or not alternation is permitted is determined by which 'narrow conflation class' the verb in question belongs to. The 'throw'-class (verbs of ballistic motion, like 'throw', 'toss', 'kick') allows (7) to apply; the 'pull'-class (verbs of continuous

4. By and large Pinker treats the representation with the PATH (i.e. the top one) as the input.
impacting of force, such as 'pull', 'push', 'carry') does not.\(^5\)

(8) throw

\[
\text{EVENT} \quad \text{effect} \\
\text{ACT THING THING . MANNER [ ] [i] "throwing" EVENT} \\
\quad \text{GO . THING PATH} \\
\quad \quad \quad \text{i [ ]} \\
\quad \quad \quad \text{to THING}
\]

(9) pull

\[
\text{EVENT} \quad \text{effect} \\
\text{ACT THING THING . MANNER [ ] [i] "pulling" EVENT} \\
\quad \text{GO . THING PATH} \\
\quad \quad \quad \text{i [ ]} \\
\quad \quad \quad \text{to THING}
\]

In parallel fashion, the 'tell'-class (illocutionary verbs: e.g. 'tell', 'ask', 'show') is dativisable, while the 'shout'-class (manner of speaking verbs, like 'shout', 'murmur', 'yell') is not.

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5. I should say that the representations below are not exactly what appears in Pinker's book. I have eliminated some obvious misprints and have made some attempt to reduce inconsistencies. I also add indices - these are mentioned by Pinker in the text, but are only implicit in his tree structures.
In addition to belonging to an appropriate 'narrow conflation class', dativisable verbs must also satisfy a morpho-phonological constraint: they must not be Latinate. This is to account for sentences like (2). Note that a number of classes (the 'radio'-class and the 'bequeath'-class) must be rendered immune from this constraint.

6. As empirical support for this position, Pinker cites some of the results of Gropen et al. (1989). Specifically, adults prefer novel 'to'-datives of verbs like 'tonk' or 'floose' to the corresponding constructions with 'dorfinise' or 'orgulate'.
according to Pinker. Modulo morpho-phonology then, the 'broad range rule' is designed to be property predicting, while only the 'narrow conflation classes' are existence predicting.7

A CRITIQUE

For the purposes of my discussion, it is not absolutely vital for the reader to master every last detail in (7) - (11). This spares us the necessity of presenting all the conflation classes together with a list and explanation of all the lexicosemantic primitives to be found therein; basically familiarity with Jackendoff (1983, 1987) should suffice for parsing the representations shown. At this stage it is enough to note that certain rather small details (e.g. the association to the time line, certain kinds of PROPERTY nodes, certain semantic field annotations) can determine whether a verb is inside a conflation class or not. At other times, quite large differences can be found within a single such class: For instance, the neutral transfer verb 'give' and the much more semantically intricate verb 'sell' are claimed to be members of the same narrow conflation class. Ultimately however, the distinction between what counts in settling demarcation disputes and what does not is left somewhat hazy, so I will spare the reader an extensive list of low level quibbles of this sort.

7. Actually, if a child has a dative broad range rule, an existence (of alternation) prediction might automatically be made for 'give', since the structure of 'give' and the input structure to the broad range are identical. Crucially, this logic does not hold outside of the 'give'-class.
Instead, let me begin by examining a few of the higher level features of Pinker's theory. One reasonably obvious feature is that it is list-based, in the following sense: The set of dativisable verbs is determined via a list of narrow conflation classes, and the set of non-dativisable verbs is also determined in part by a list of conflation classes. I maintain that a good dose of scepticism is in order when evaluating any scientific theory that crucially relies on lists (especially on lists of more than two elements). From the point of view of cognitive science, it seems relatively safe to say that the human mind deals with lists only as a last resort. Further, from a much broader perspective, one might claim that many a scientific advance is construable as a lessening in the amount of necessary listing. I will not multiply examples here. Suffice to say that the introduction of the periodic table in chemistry, and subsequently the theory of the elements in terms of electron shell structure, not to mention the whole history of twentieth century particle physics are prime instances of this. Closer to home, consider the change in phonological theory from feature bundles to feature geometry. In each case, the prima facie necessity for large lists has been shown to be epiphenomenal.

Considerations of minimising listing (important though I think they

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8. Consider for instance the difficulty of memorising an arbitrary unstructured list of twenty random words, as compared to the difficulty of memorising a twenty word sentence. If further structure (e.g. a melody) is added to the latter, it becomes even less list-like, and consequently even easier to memorise.
are) are by no means even close to being a knockdown argument against any particular theory, Pinker's included. But they do prompt us to look for such arguments. In this respect, I interpret Pinker's theory as making the following prediction: Suppose a child learning English is exposed to (sufficiently many) instances of the verb 'pull' in the double object construction. Let us assume (with Pinker) that narrow conflation class construction proceeds successfully as usual. On Pinker's account, the only factor normally preventing 'pull' from participating in the dative alternation is that its narrow conflation class is (somehow) marked undativisable, there being no evidence of dativisability in standard English input. By hypothesis, this will now change. Hence our hypothetical child will now treat 'pull', as well as verbs like 'carry' and 'push' as alternators. This argument follows essentially from Pinker's reliance on the logic of class-wise conservatism rather than straight verb-wise conservatism.

Testing this empirical prediction in an experimental setting is bound to be very tricky. What is at issue is not our ability to coerce a child into uttering 'Pull me the truck' by exposing it to a mass of repetitions of parallel sentences. Rather, the crucial prediction is that for such a child, there will ultimately be no difference in dativisability judgments between verbs like 'throw' or 'kick' on the one hand and verbs like 'pull' or 'carry' on the other. The 'ultimately' here is crucial, and is not so trivial to test.

Fortunately, it looks as if the relevant experiment (albeit without elaborate controls) has in essence already been done for us. Recall
my earlier observations about the published literature on the subject of the dative alternation, and specifically about the level of disagreement with respect to dativisability there found.

Significantly, Pinker's theory does not mandate across the board agreement, but it does seem to predict that narrow conflation classes will be treated homogeneously by any one particular speaker of English. This however is not what we find. Consider the 'pull'-class. Green (1974:211) accepts 'pull', 'push' and 'carry' in the double object configuration, but not 'lift' or 'raise'. (She is uncertain about 'tug'.) Oehrle (1976:138,143) accepts 'lower', but rejects 'carry', 'lift' and 'raise'. Finally, Pinker (1989:111) explicitly lists virtually all these verbs as members of the same undativisable narrow conflation class. This situation is exactly what is not predicted - speakers of English do not seem to be treating the 'pull'-class as a unit. Something not dissimilar can be observed with respect to the 'shout'-class. Here Green (1974:211) lists 'shout', 'whisper' 'etc.' as dativisable, in contrast to 'mutter', 'scream' and 'drawl' which are not. 'Yell' is marked as uncertain. Finally, even Pinker (1989:111,112), when discussing his non-dativisable 'reward'-class (i.e. 'verbs of fulfilling' like 'credit', 'entrust', 'honour', 'present', 'reward', 'supply') annotates these verbs non-uniformly (from '?' to '?'* to '*') when they are placed in the double object construction. In sum, the narrow conflation classes simply do not appear to act as the units for diathesis determination,

9. He does not consider 'tug'.
despite being explicitly designed to fulfill this role.

I should point out that Pinker's theory is not based on a binary dative/non-dative distinction, but on a ternary one: alternating, 'Haigspeak', and non-alternating. 'Haigspeak' \cite{op.cit.ipp.152-164} ranges from non-standard coinages to performance induced ungrammaticality. It is characterised theoretically by the application of a broad range rule to a verb belonging to a narrow conflation class that is marked as non-alternating. Pinker reports that when people who utter 'Haigspeak' are subsequently confronted with their creations (interspersed among distractor items) their reactions vary from cringing to incredulity. It is precisely for this reason that in the foregoing paragraph I used the published judgments of linguists working on the topic of dativisation. For this reason too I formulated the hypothetical 'pull' experiment as predicting no difference between the 'pull'-class and the 'throw'-class (rather than merely predicting the production of something like 'Pull me the truck'). In other words, the escape hatch conceivably offered by 'Haigspeak' is unavailable here, on the quite reasonable assumption that linguists do not publish (unannotated) judgments that they would cringe at.

The preceding discussion is of course an argument against only a quite strong version of Pinker's theory. One can imagine ways of weakening it so as to sidestep the challenges posed above. For instance, one might argue that the particular narrow conflation classes that Pinker postulates are not quite the appropriate ones,
rather narrower classes actually being needed. Or one could introduce means for allowing speaker variation in the process of narrow class construction. My response here is that one should be wary—the more machinery that is introduced and the narrower the resulting classes (a position that approaches the undesired and empirically dubious hypothesis of verb-wise conservatism), the less attractive the theory becomes.

THE ASPECT CONNECTION

Pinker's theory is to a large degree an input-driven one, and it is this property that I crucially relied on in formulating the above challenge. To the extent that I have cast doubt on input sensitivity and brute-force memorisation in accounting for the status of verbs such as 'pull' and 'shout', we seem to be left with one other family of options: If the status of these verbs is not simply 'learnt', it must come (at least in part) from the inner resources of the human mind. It is at this point that aspectual considerations re-enter the picture. Given that English provides the child with no (overt) morphological encoding of the inherent aspect of verbs, and given the results of the earlier chapters of this study which accord aspectual information a key role in the organisation of lexical entries, it is plausible to conclude that there are innate features of the language faculty that are playing a crucial (though somewhat indirect) role here. For readers who consider my discussion of speaker variation as an immediate refutation of any innateness hypothesis I hasten to add that this issue will be dealt with shortly and will be shown to be
broadly consistent with my theoretical position.

The particular connection between aspect and dativisability that I have in mind is one that I mentioned in passing in chapter 2. Recall the class of inherently perfective verbs in Polish. Inherent perfectives were defined as those verbs which manifest perfective aspect despite the absence of a perfectivising prefix. I assume there is something about their meaning that intrinsically favours perfectivity. These verbs - listed in (11) of section 2.2 - all have English counterparts with the property that if they allow three arguments then they allow the double object configuration. The relevant cases are repeated below for convenience:

\begin{align*}
(12) \quad & \text{dać} \quad \text{to give} \\
& \text{rzucić} \quad \text{to throw} \\
& \text{kupić} \quad \text{to buy} \\
& \text{puścić} \quad \text{to drop} \\
& \text{chwycić} \quad \text{to grab}
\end{align*}

Naturally, inherent perfectives like "skoczyć" (to jump) or "chybić" (to miss a target), being essentially monadic, tell us nothing about the English double object construction. The question that I would like to address here is the extent to which the implication from Polish inherent perfectives to English double object verbs holds in the reverse direction. Two points must be noted immediately. One is that there are clearly delineable verb classes for which this reverse implication does not hold. Thus English verbs of creation (such as

\begin{itemize}
\item [10.] Curiously the last two items in this list take three arguments more readily in English than in Polish.
\end{itemize}
'bake', 'build', 'knit', 'sew') uniformly allow either a 'for'-phrase or a double object configuration, but their straightforward Polish counterparts are all simple imperfectives. I take this to mean that there are other factors at work that one must try to identify.

Secondly, apart from the core cases of Polish inherent perfectives mentioned above, one must bear in mind the existence of a couple other morphologically distinguished verb classes: perfectives ending in "-nąd" (typically denominal — see section 2.2), and perfectives that appear to have an aspectual prefix but actually do not. The false appearance here is due to the fact that the prefix has undergone reanalysis and become part of the stem — examples will be given directly.

For the purposes of exposition then I will run through the dativisable and non-dativisable 'narrow conflation classes' of English verbs postulated by Pinker (1989), testing the members of each set with respect to the suggested correlation with inherent perfectivity in Polish. I will begin with the 'to'-datives.

the 'give' class

These are the prototypical double object verbs like 'give', 'hand', 'pass', 'sell', 'lend', 'trade', 'rent', 'serve', 'pay', and 'feed' about which which dativisablity judgments are very crisp and clear. We have already seen that 'give' corresponds to the Polish inherent perfective "dać". 'Pass' and 'hand' correspond to "POdać", clearly
based on "dać", as does 'serve' in the relevant sense. 11

'Sell' is translated as "sprzedąć". This verb looks as if it is a prefixed form of "dać", and moreover a multiply prefixed form, which tells us to look beyond appearances. Actually for all intents and purposes "sprzedąć" is best regarded as aspectually unprefixed (presumably via reanalysis diachronically). Being perfective it therefore counts as an inherent perfective. This analysis is supported by the existence of "WYsprzedąć" and "ROZsprzedąć" which show us that like all other unprefixed verbs, "sprzedąć" allows the addition of one (in fact precisely one) aspectual prefix of the "WY", "ROZ" type. 12

A parallel account can be given for 'lend' 13 which corresponds to "pożyczyć". The existence of "WYpożyczyć" (to lend out) and "ZApżyczyć" (to borrow) indicate that "pożyczyć" should be viewed as unprefixed. Since it is perfective it must be treated as an inherent perfective. Note that the (imperfective) verb "życzyć" exists, but it means 'to wish', rendering any synchronic connection with "pożyczyć"

11. Here I mean 'serve' as in 'He served me the meat' = "POdaż mi mięso". Other uses of 'serve' (e.g. 'serve no purpose') correspond to "służyć", a simple imperfective, but are irrelevant here. Note that 'to serve a client' is "OBsłużyć".

12. Recall there is one other type - aspectual prefixes with 'multiplicative power': distributive "PO" and accumulative "NA"; but these are clearly beside the point here.

13. Also for 'loan' for those dialects treating it as a verb. Note that "pożyczyć" is actually neutral between lending and borrowing.
extremely dubious. In like manner, 'trade' ("wymienić") and 'rent'
("Wyнная") correspond in effect to inherent perfectives.
Synchronically, "mienić" only exists today in "mienić się" (to
shimmer), while "Wyнная" is based on the reanalysed inherent
perfective "najęć" (to hire), the verb "jęć" no longer existing in
contemporary Polish. This leaves us with 'pay' and 'feed' which
correspond to imperfectives ("płacić" and "karmić" respectively), but
which are also non-typical members of the 'give'-class since they are
slightly degraded (to my ear) in the context of a full 'to'-phrase.
"Karmić" is further special insofar as it mandates Instrumental Case
for any object designating food.

Finally, we must account for Pinker's 'related subclass' consisting
of 'send', 'ship', and 'mail', which are either "P0słać" or "Wyслаć"
in Polish. Interestingly "słać" does exist as an imperfective, but
its use is restricted to habitual situations and to the formulaic
sending of greetings. No such restrictions apply to "P0słać" or
"Wyслаć", which I accordingly analyse as verbs that are incipiently or
on the way to becoming inherent perfectives. In summary then, most
'give'-class verbs can be viewed as having inherent perfective
counterparts in Polish, the exceptions being 'pay' and 'feed' (and
these have rather special properties).14

14. The fact that both 'pay' and 'feed' are nouns as well as verbs
should also be kept in mind, particularly when we come to the
'radio'-class.
the 'throw' class

These are the verbs of ballistic motion: 'throw', 'toss', 'hit', 'kick', 'flip', 'poke', 'fling', 'blast', etc. 'Throw' corresponds to the indubitable inherent perfective "rzucić". 'Toss', translatable (in the relevant contexts) as "PODrzucić" is built on the same root. Several verbs in this class correspond to inherent perfectives ending in "-nąć": 'kick' = "kopnąć", 'poke' = "szturchnąć", 'flip' = "trzepnąć". 'Hit' is translated as "uderzyć", an inherent perfective verb. Pinker also lists 'fling', 'slap' and 'blast' (in an ice hockey context). These do not seem to have exact Polish equivalents but would be translated by inherent perfectives (like "rzucić" or "cisnąć"\(^\text{15}\), with or without modifying phrases) all the same. Thus for this class of verbs our generalisation holds very well.

The reader will recall that aspectual considerations (as encoded by the device of a 'modified time line' - see (8)) also played a vital role in Pinker's theory when identifying the lexicosemantic representation of the 'throw'-class. I consider this to be an important insight - one that when captured in a more appropriate notation (such as that advocated here) can be seen to have implications far beyond one or two subclasses of English verbs. Pinker himself (op.cit. p.206) remarks that '[f]or better or worse, the time line introduces considerable redundancy in semantic

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15. There is also an imperfective verb "cisnąć" = 'to press' which is totally irrelevant here.
representations'. I agree entirely with this sentiment, and hasten to add that one of the key features of my notational system is that it crucially relies on the absence of some of the types of redundancy mentioned by Pinker. Stripped of such excess baggage, the aspectual considerations that enter into Pinker's account of the 'throw'-class can be shown to play a central (and hitherto unsuspected) role in the whole notion of dativisability.

the 'pull' class

Pinker calls these the verbs of continuous imparting of force, and cites 'pull', 'push', 'carry', 'haul', 'lift' and 'lower'. 'Carry', 'pull' and 'haul' correspond to the Polish verbs "niesć", "ciągnąć" and "wlec" (respectively), all of which are members of the Polish verbs of motion paradigm (see section 1.4), and all of which are imperfective. This looks like a desirable result given that Pinker and Grimshaw treat this class as undativisable. This supports the dativisability / inherent perfectivity correlation.

At first blush, 'push' seems to pose a problem since we might want to translate it (as one dictionary does) with "pchnąć", which is in fact an inherent perfective. Here one should note that unlike 'push', "pchnąć" tends to be used mainly for certain specialised types of pushing - thus Bulas et al. give 'jerk, thrust at, stab' (rather than

16. I am thinking here particularly of temporal ordering, which in a theory like mine that strictly separates aspect from tense (based on morphological evidence) has no place in aspectual representations.
'push') as translations for "pchnąć". Outside of the relevant special contexts (such as "pchnąć sztyletem" = 'to stab with a dagger', unglossable with 'push'), "pchnąć" tends to be replaced by "POpchnąć" (still a perfective of course) as if to emphasise that what is at stake is 'giving a push' rather than a more general or generic notion of pushing. To translate the continuous type of pushing which Pinker has in mind when listing 'push' in the class of verbs of continuous imparting of force, one must use either "pchać" (morphologically but not semantically the imperfective partner of "pchnąć") or "sunąć" (one of the verbs of motion).

Lest one get the impression that this way of handling the apparent counterexample to our generalisation posed by "pchnąć" fineses the issue, I hasten to remind the reader that the 'pull'-class is one of the main set of verbs about which Pinker and Green disagree when it comes to dativisability judgments. The natural resolution here is that Pinker insists on an interpretation with CONTINUOUSNESS, while Green finds it reasonably natural to force a reading on 'push' closer to that of "(PO)pchnąć". Why a verb like 'carry' should also trigger disagreement will be explored in the next subsection.

Two more verbs in the 'pull'-class must be dealt with, and similar types of considerations arise. Thus 'lift' can be translated as "PODniesć" (a perfective of "nieść" = 'to carry') or "dźwignąć" (an inherent perfective - although strictly speaking this means 'to raise with much effort'). In both cases, however, the glosses are closer to 'to lift up' than to a verb signifying continuous motion. Finally,
'lower' corresponds to "obniżyć", "zniżyć" or "Spuścić", the first two of which must be viewed as honorary inherent perfectives (there being no "źniżyć") and the third is based on the inherent perfective "Spuścić". Again this looks as if it goes against the inherent perfectivity / dativisability correlation (at least on Pinker's and Grimshaw's judgments), and further we do not seem to have a way out by saying that "Spuścić" (for example) means "to lower down" rather than 'to lower'. However I will add here that Oehrle (1976:138) finds a contrast between 'lower' and 'lift', with only the former tolerating the double object construction. If pressed for a comparative judgment, my own intuitions tend in the same direction. Hence not only do we not have a flatout counterexample here, but we may indeed have a small piece of evidence in favour of our generalisation once Pinker's verb typology is slightly refined.

'bring' and 'take'

Pinker places these two verbs in a class of their own. Interestingly he appears to hedge a little with respect to their dativisability, writing (op.cit. p.111 - but with my emphasis) that they 'do SEEM to take the double-object form: I brought/took him his lunch.' Significantly in my view, the cited example has a pronominal object. I find a full NP in this context perceptibly degraded: Consider Green's (op.cit. p.133 - her orthography) example 'John took his advisor the first chapter on Monday.' Essentially 'bring' and 'take' need a strong deictic element supplied by context to felicitously undergo dativisation.
Polish does not have separate verbs for 'bring' and 'take', but uses "PRZYniejsić" and "ZAniesić" instead. Both are perfectives of "niejsić" = 'to carry', with prefixes interpreted deictically. (One might speculate that were Polish to develop independent verbs for 'take' and 'bring' they would be perfective, and inherently so.) I suspect that Green's acceptance of 'carry' in the double object construction can be made sense of in this light by positing some kind of contextual deixis (which for Green, apparently, need only be fairly weak).

the 'radio' class

I turn next to verbs of communication. One class about which there is agreement in the literature consists of verbs like 'radio', 'wire', 'cable', 'telephone', 'telegraph', as well as more recent creations such as 'E-mail', and 'fax'. The latter indicates in a particularly striking way the inadequacy of a verb-wise conservative approach to the dative alternation. I claim that dativisability is to be expected here given the denominal character of these verbs, combined with the fact that nouns in Polish are tied to inherent perfectives of the suffixed ("-nac") variety. (In fact, I suspect that many a verb belonging to a basically non-dativisable class that has for some speakers of English taken on the ability to appear in the double object construction has done so via the indirect nominal route. This seems to be a plausible way of accounting for Green's intuitions about

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17. The 'pick out' (= "brać") sense of 'take' is not relevant here.
'pull', for example.)

The fact that many of the verbs in the 'radio'-class have no direct (non-periphrastic) Polish counterparts in no way affects the logic of my argument here. Quite simply, the verb 'radio' acquires inherent perfective aspect in exactly the same way as the Polish verb "błysnąć" = 'to flash' (from the noun "błysk") does. See section 2.2 for details on these lexically aspectual zero forms. 'Telephone' and 'telegraph' actually have corresponding verbs in Polish that are imperfective (viz. "telefonować" and "telegrafować"), but here the predicate-forming suffix "-ow-" appears, thus blocking the "-nąć" route to inherent perfectivity. (Technically, the suffix "-ow-" can be thought of as licensing a box in the lexicon, and once we have a box we can't have a zero representation.) As a result, we find no actual counterexamples to our dativisability / inherent perfectivity correlation in the 'radio'-class.

the 'shout' class

I turn next to the somewhat controversial 'shout'-class, i.e. to Pinker's manner of speaking verbs, examples of which are 'shout', 'scream', 'whisper', 'murmur', 'yell', 'growl', and so forth. Recall from chapter 2 that these verbs generally have two types of counterparts in Polish – an inherent perfective and a simple

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18. The Polish suffix "-ow-" is a very productive predicate forming morpheme. Witness such verbs as "startować" (to start) and "stopować" (to stop), as well as such adjectives as "zerowy" (pertaining to zero) and "stalowy" (made of steel).
imperfective. Thus 'shout' is either "krzyknąć" (from "krzyk") or "krzyczeć"; 'scream' is either "wrzasnąć" (from "wrzask") or "wrzeszczeć", etc. The question now arises as to which member of these Polish pairs is to be treated as THE counterpart to any particular English manner of speaking verb for the purposes of testing our correlation. Since judgments about dativisability go both ways, I will of course say that either the inherent perfective or the simple imperfective can count, although the choice is not random.

It is plausible to assume that 'shout', 'scream', etc. are fundamentally verbal notions. Accordingly I assume that children will generally acquire the verb 'to shout' before the noun '(a) shout'. This implies that the basic Polish counterpart to English 'shout' should be the basically verbal "krzyczeć" rather than the obviously denominal "krzyknąć"; and so forth down the list. Now "krzyczeć" is an imperfective verb, which means it is not an inherent perfective, which in turn implies that 'shout' should not be dativizable. This is indeed the judgment of Pinker and Grimshaw. Green occasionally disagrees, though there is actually unanimity for the MAJORITY of verbs on the 'manner of speaking' list.

The English verb 'shout' leads directly to the zero-derived noun 'shout'. Now suppose one were to take this noun and form a verb out of it (in the 'radio'-class fashion). The resultant denominal verb would correspond to "krzyknąć", an inherent perfective, and so should be available for the double object construction. This is what I suspect Green is doing for a few of the verbs on Pinker's list. Of
course, the route from verb to noun to verb is less economical than simply taking a verb from the lexicon. I interpret this in terms of the former option being more costly than the latter. Apparently, at least for a few verbs, some (but not all) speakers of English are willing to tolerate this cost. The fact that I find the verbs of this class somewhat degraded in the double object construction, but often not totally hopeless, indicates an awareness but only a near-readiness to tolerate the associated cost.

With this in mind, a few quotations from the relevant literature will be found to be quite illuminating. With respect to the denominal character of the quasi-dativisable verbs of manner of speaking, consider the following footnote from Pinker (1989:395):

Green (1974) finds 'shout' and 'whisper' to be dativizable to [sic] her and proposes that they encode the 'means' of communication rather than the 'manner'. The difference can be seen in the contrast between

'Using a whisper/shout, he gave her a word of encouragement'
and

*'Using a mumble / mutter / mention, he gave her a word of encouragement.'

This footnote is in effect a summary of the footnote to be found on page 89 of Green (1974). With respect to our notion of tolerating cost, note that while Green (op.cit.) takes 'shout' and 'whisper' to be dativisable on page 89 and in the summary / table on page 211, rather earlier (on page 33) she writes (my emphasis):

'deny', 'say', and 'SHOUT' REQUIRE the preposition 'to' before a pre-complement indirect object.

I do not interpret this is a grave inconsistency, but rather as a
growing tolerance of the cost of the relevant derivation of 'shout'.

Green herself (op.cit. p.91) writes:

in my own case, as I worked with dative-movement sentences, several verbs in my vocabulary ceased to be exceptional [= non-dativisable] (for instance, 'purchase'), and others fluctuated.

Given the potential availability of both a simple imperfective and an inherent perfective counterpart for a verb of manner of speaking, together with the fact that the latter can naturally be interpreted as more costly, the theoretical position advanced here captures in a rather neat way what looks initially like patent disagreement with respect to dativisability judgments in the published literature. The fact that such issues can be explicated after years of consignment to the level of footnotes is immediately construable as support for the theory presented here.

the 'tell' class

The remaining (dativisable) verbs of communication are those in the so-called illocutionary class: e.g. 'tell', 'show', 'ask', 'teach', 'read', 'write', 'cite', 'quote', etc. 'Tell' corresponds to "powiedzieć", an (honorary) inherent perfective with only an apparent aspectual prefix, as can be seen from the existence of "DOpowiedzieć" and "ROZpowiedzieć", as well as from the fact that "wiedzieć" (= to know) is not directly related. A similar situation holds of 'show' and its counterpart "pokazać". 'Ask' as in 'ask (someone) a question' is "ZAdać (komuś) pytanie", based on the inherent perfective "dać". 'Quote' and 'cite' correspond to "PRZYtoczyć", an (incipient) inherent
perfective given that its relation to the verb of motion "toczyć" (= to roll) is at best indirect.¹⁹

So far, so good - but now we must face some apparent problems. 'Write' and 'read' correspond directly to simple imperfectives "pisać" and "czytać", as the reader will recall from chapter 1. Given that we are dealing with a verb of creation and one of re-creation, I hypothesise that dativisability arises here as it does for the 'bake' / 'build' / 'sew' class mentioned above and to be discussed shortly. Finally, 'teach' also corresponds to a simple imperfective (uczyc), but as extensively discussed by Green (op.cit. chapter 4), this verb has rather special properties. I conclude then that modulo a few (partially identified) interfering factors, the illocutionary verbs do not challenge the dativisability / inherent perfectivity correlation.

the 'bequeath' class

These are referred to by Pinker as the 'verbs of future having' and include 'bequeath', 'leave', 'forward', promise', 'offer', 'allocate', 'assign', 'allot', 'award', 'advance', 'reserve', 'grant' and 'guarantee'. They are quite generally dativisable, and correspondingly tend to have inherent perfective equivalents in Polish (often via prefixal reanalysis). To give a few examples: 'bequeath' corresponds to "ZApisać" (only vaguely related to "pisać" = 'to write'), 'leave' corresponds to "zostawić", 'promise' corresponds to

¹⁹. The simple imperfective translation "cytować" is not relevant, due to the presence of the suffix "-ow-", as discussed above.
"obiecać", 'allot' corresponds to "wyznaczyć" (with no direct connection to "znaczyć" = 'to mean, mark'). 'Guarantee', translated as "gwarantować" (an imperfective), only appears to be problematic. Firstly, "gwarantować" contains the suffix "-ow-" making it irrelevant to the point at hand, and secondly the English verb 'guarantee' can clearly take the nominal route to inherent perfectivity in any case.

Pinker lists the verb 'refer' as belonging to this class. This looks like a problem, given the Polish translation "(S)kierować", but here I simply disagree with the judgment that 'refer' participates in fully natural fashion in the double object construction. Green (1974:212), heretofore very permissive, agrees with me.

the 'spare' class

This class (consisting of verbs like 'spare', 'refuse', 'bet', 'charge', 'fine', 'forgive') is rather special in that it allows a double object configuration but disallows a non-double object alternant. Since I do not have much to add to the published literature on this score, I will not discuss these verbs in detail, but merely note that most (though apparently not all) have counterparts in Polish that are to be viewed as inherent perfectives (often by prefixal reanalysis).

the 'credit' class

The verbs in this class include 'credit', 'reward', 'entrust', 'honour', 'bestow', 'present' and 'supply'. Most are patently denominal, which prima facie would lead us to expect dativisability.
Likewise, Polish counterparts are inherent perfectives (generally by
prefixal reanalysis): e.g. 'supply' = "dostarczyć", 'entrust' =
"powierzyć", 'present' = "wręczyć", 'reward' = 'nagrodzić'. 'Bestow'
corresponding to "NAdać" is clearly based on the inherent perfective
"dać".

In fact, however, these verbs are generally regarded as
non-dativisable. What seems to be happening is that the more specific
'V NP with NP' mode of argument realisation is somehow blocking the
more general double object configuration:

? I supplied my class the requisite books.
  I supplied my class with the requisite books.

Significantly though, the contrast is fairly weak. Thus Pinker
(1989:157) cites several examples of supposed violations taken to be
acceptable (if say, occurrence in a TV ad is a measure of
acceptability), and further explicitly writes: '(Some of these forms
are marginally acceptable to me, and I suspect that the distinction
for these verbs is eroding.)' Later, (op.cit. p.218) he adds that
these verbs '... for many speakers admit both the double-object and
the 'with'-object forms'. In our terms this is understandable, since
given our English/Polish correlation, we expect that there should be
strong pressure on these verbs to tolerate the double object
configuration.

In summary then, I note that for 'to'-datives the dativisability /
inherent perfectivity correlations holds quite nicely, and at times
points to ways of resolving conflicts among judgments. Only
occasionally are there interfering factors. I turn next to 'for'-datives.

the 'get' class

Dativisable verbs like 'buy', 'get', 'find', 'steal', 'order', 'grab', and 'win' seem to pose few problems for our generalisation. 'Buy' (= "kupić") and 'grab' (= "chwycić") correspond to canonical inherent perfective verbs. Most of the others correspond to verbs that are inherently perfective by virtue of prefix reanalysis: 'find' = "znaleźć", 'order' = "zamówić", 'win' = "wygrać", 'get' = "dostać". Note that "mówić" (to speak), "grać" (to play), and "stać" (to stand) exist, but are at best only vaguely connected, supporting the reanalysis hypothesis. (I have nothing to say about 'steal' = "kraść".)

the 'choose' class

Pinker (unlike Green) marks 'choose' and 'pick' as non-dativerisible. They correspond to the Polish "WYbrać", which is perfective, but not inherently so. This is in line with our generalisation. (The fact that some find the level of violation with 'choose' and 'pick' rather weak might indicate a treatment similar to that suggested above for 'take'.)

the other 'for'-datives

As mentioned earlier, there are subclasses of 'for'-datives that look like clear violations of our dativerisability / inherent
perfectivity correlation. It is interesting that these classes are open-ended and further have fairly sharp semantic characterisations. I will focus on two specific subclasses. One might be dubbed 'verbs of creation' and gives rise to sentences like (13a)-(13c) below. The other contains verbs of dedication or symbolic creation, illustrated in (13d)-(13e).

(13) a. Laura built Max a house.
    b. Ned fixed Ossie a sandwich.
    c. Paul sewed Quintus a new shirt.
    d. Ralph danced Sue a jig.
    e. Cry me a river.

It has been noted in the literature that sentences like (13a)-(13c) do not merely inform us of an event of creation. Rather, the argument denoted by the indirect object seems to be providing a standard or measure that the episode of creation must live up to. This is (in part) the difference between 'sewing a shirt' and 'sewing someone a shirt'. As Pinker (1989:395) notes, 'boiling someone an egg' is not an event of creation of an egg; it is however the event of creation of a certain dish or unit of consumption intended to match a known or presumed standard - that of the indirect object. Green (1974:92) points out that this is why one can 'burn John a steak' if he likes his steaks black, but not if his standards are on the rare side. 20

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20. The relevant sentence is somewhat marginal, but it is the contrastive judgment that is important here.
The notion of standard is also evident in dedication type sentences as in (13d) and (13e).

The following contrast can now be directly accounted for:

(14) a. Ted fixed the radio for Ursula.
    b. * Ted fixed Ursula the radio.

(15) a. Victoria opened the door for William.
    b. * Victoria opened William the door.

In each pair, the (a) sentence denotes an episode with an in-built standard. Consequently, the 'for'-object cannot be the determiner of the standard of the event, ruling out the (b) sentences.

It is of interest to note that Polish does not have any exact equivalent of this standard-supplying role of a second object. Thus roughly corresponding to (13) we find sentences with Dative Case objects like (16), but we also find (17) which do not have double object counterparts in English:

(16) a. Budowałem wam dom.
    'I was building you a house.'
    b. Uszyłam ci koszulę.
    'I have sewn you a shirt.'

(17) a. Naprawiłem mu radio.
    'I fixed the radio for him.'
    b. Otworzyłam ci drzwi.
    'I opened the door for you.'
    c. Spaliłem mu 'toast'.
    'I burnt the toast intended for him.' (even with the background knowledge that he hates burnt toast)
The fact that Polish simply lacks special verbal forms or syntactic constructions to express these particular uses of English 'build', 'sew' etc., renders the fact that in other contexts verbs like 'build' and 'sew' correspond to Polish simple imperfectives rather innocuous. We do not find an English dativisability / Polish inherent perfectivity correlation here simply because there are no relevant equivalent verbs to correlate. In this way, a large class of apparent counterexamples to our generalisation is shown to be merely that - viz. apparent. As alluded to above, I further think that double object uses of 'write' and 'read' should likewise be treated as verbs of (re-)creation, removing two putative counterexamples from among the 'to'-dative verbs.

The fact that there are languages (such as Polish) lacking exact equivalents to some of the English 'for'-datives should come as no surprise once acquisition facts are taken into consideration. As documented by Pinker (1989), children learning English make very few dativisation 'errors'. A few kinds of 'errors' can however be found by carefully examining large slabs of spontaneous production. One kind stems from verb substitutions ('write' for 'draw', or 'say' for 'tell'). More interesting for our purposes are utterances like the following:21

21. Pinker attributes (18) to Mazurkewich and White (1984), while (19) is from the CHILDES database. (n;m) stands for n years and m months.
Data of this sort seem to indicate that the relevant properties of English 'for'-datives are indeed quite special and not so trivial to acquire. It is hardly surprising then that other languages may lack them.22

IMPLICATIONS

Overall I conclude that the correlation between English dativisability and Polish inherent perfectivity holds up remarkably well. There are interfering factors, but where appropriately equivalent verbs can be found, they line up quite regularly as our generalisation predicts. This is interesting since Polish does not have an English-like double object construction, and English has no independent reflexes (as far as I can tell) of inherent perfectivity. The matching effect is thus plausibly attributable to Universal Grammar. One consequence of this is the early and successful acquisition of 'to'-datives by children learning English. Further, as

22. To account for the possibility of (13) in English one might posit a bi-predicate analysis, with the higher phonetically empty predicate (E) being semantically evaluative (i.e. signifying that someone's standards have been satisfied). From an acquisitional perspective, children have difficulty acquiring all the properties of E. The plausibility of this approach will grow to the extent that independent motivation for E can be found.
mentioned in chapter 2, other languages where inherent perfectivity is detectable tend (as far as I have been able to determine) to implicate the same class of verbs.

It is now appropriate to ask why there should be a correlation between inherent perfectivity in Polish and dativisability in English. On one level I propose a trivial looking answer: English double object verbs are themselves inherent perfectives. In essence, I assume that the human language faculty assigns meanings to the relevant class of verbs in such a way as to naturally favour perfectivity of the inherent sort. Note that inherent perfectives receive the most parsimonious lexical aspectual representation possible: zero. Given that the lexicon favours underspecification, there will be pressure to head off in the aspectual zero direction where possible. Like Polish, I claim English succumbs. Further, the fact that English dativisability is not an all or nothing affair correlates with the existence in Polish not only of a core set of inherent perfectives, but also of 'prefixed perfectives' in various stages of reanalysis.

This leads us to ask what it is about aspectual aero status that licenses the dative alternation (in languages like English, where the rest of the grammar, especially the Case module, allows it). I propose this should be thought of as follows: Typical English activity/accomplishment verbs (e.g. 'run', 'build') start off lexically as a single point from the point of view of aspect. This point is to be interpreted as the minimal unit of the relevant
activity, constituting a cognitive grain-size. For running, the grain-size is that of a single stride; for building it might be that of laying a single brick. Note that this implies that at the lexical level, aspectual representations are already keyed to argument structure. (Thus the builder builds the house, not the house the builder.) None of this can occur for inherent perfectives. Their aspectual representations emerge entirely in the course of the derivation. During this derivation, after the transition from zero to point-inside-box, the distinguished point needs to be identified. It was not tied to any particular argument in the lexicon, as it did not exist at that level. But now it will standardly (in English) be identified by a direct object ( - the connection between distinguished points and direct objects having already been established in chapter 1). For triadic verbs, the external argument must not appear in direct object position (for whatever reason forces externalisation). Among the remaining arguments the lexicon has now forced no choice upon us. Hence precisely for verbs of inherently perfective aspect, which are zero in the lexicon, meaning that no choice of direct object can be made there, any internal argument can be syntactically realised in direct object position. Hence the dative alternation. (Naturally, other modules/principles - such as Case theory - may not be violated along the way.) In this manner, it is the class of inherent perfective verbs that allows alternate realisations of three argument clauses.

The exact syntactic configuration of double object sentences is still a matter of theoretical dispute. What the various positions
advanced seem to share is that the direct object position can be occupied by either of two arguments. In Marantz (1990), objects occur in Spec of VP position, resulting in the following two structures:

\[ \text{A gave B to C} \]

\[ \text{A gave C B} \]

Larson (1988) allows either B or C to appear in his direct object position via an optional operation (\#) he tries to assimilate to passivisation:

\[ \text{A gave B to C} \]
In broad terms, any theory of this sort will be compatible with the view of dative alternation verbs advanced here (at least as has so far been determined).

the morpho-phonological constraint

To prevent verbs like 'donate', 'explain', 'obtain', 'submit', 'reveal' etc. from counting as dative alternation verbs, a morpho-phonological constraint will still be needed. I agree with Green (1974) that a simple condition on the number of syllables (for example) is inadequate. The native/Latinate distinction also faces counterexamples (recall 'guarantee', 'telephone', etc.). An interesting suggestion is offered by Oehrle (1976:124): 23

the dative alternation does not apply if the verb in question has the internal structure

\[ \text{prefix} = \text{stem} \]

I propose that the view of the Latinate/non-Latinate distinction proposed in section 2.1 is relevant here - i.e. verbs with imposed

\[ \text{'} = \text{'} \text{ is a phonological boundary.} \]
morphological structure do not participate in the dative alternation. This has the advantage of ruling out 'donate', as well as 'orgulate' and 'dorfinise' (from Gropen et al. (1989)) in addition to Oehrle's cases. I suggest that 'promise' and 'telephone' etc. are immune to this constraint because of the denominal route to inherent perfectivity: All the aspectual system cares about for these lexical entries is the syntactic category Noun. For non-doneminals, internal morphological structure must be examined, presumably to make sure that no aspectually pertinent information is being missed.  

One should ask why imposed morphological structure blocks aspectual zerohood. I propose that Latinate verbs have aspectual information stored under the lexical entries of their suffixes and bound stems. The relevant aspectual information in English is a single point, and it will be stored under '-plain' (cf. 'explain', 'complain'), '-ate' (cf. 'pulsate', 'donate', 'levitate'), '-fer', '-ceive', etc. (The choice of a single point here is in line with most English verbs. It is further needed in order to produce activity readings (cf. 'complain for 30 minutes', 'levitate for 30 hours') by reduplication.) Now a single point is not the same as zero - hence inherent perfectivity and thus the dative alternation is unavailable.

Summarising, it appears that aspectual considerations (in the form of inherent perfectivity) are one of the central determinants of

24. 'Assign', and 'allot' form a residual problem here; either they are parasitic on the denominal 'advance' which has the same prefix, or a schwa does not have enough content to count as a prefix here.
English dativisability. Only in a theory of aspect with enough content to recognise the coherence and special properties of the relevant class of verbs can such a conclusion be reached. I have nothing to add about the subtle (and somewhat difficult to acquire) factor(s) licensing some kinds of 'for'-datives. All the same I think it is safe to say that the view advanced here obviates the necessity of lexically storing a list of classes of dativisable verbs.

4.2 A NOTE ON THE LOCATIVE ALTERNATION
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It will be recalled that Pinker (1989) deals not only with dativisability, but with the locative, causative and passive alternations as well. Narrow conflation classes do not play a role in Pinker's theory of passives, but one might claim that they are 'independently motivated' by their role in accounting for locatives and causatives.\(^{25}\) I will examine the former here.

The locative alternation can be illustrated with pairs such as the following:\(^{26}\)

\[-------------
25. The causative/inchoative alternation actually presents notorious difficulties in the course of acquisition.

26. Standard references include Anderson (1971), Schwartz-Norman (1976), and Rappaport and Levin (1986).\]
(20) a. Xerxes loaded hay onto the cart.
   b. Xerxes loaded the cart with hay.

(21) a. Yvonne sprayed paint onto the wall.
   b. Yvonne sprayed the wall with paint.

Significantly, Polish also exhibits pairs of this type, though the choice of aspectual prefix can play a crucial role:

(22) a. ZAładowałem węgiel na wagon.
     'I loaded the coal onto the wagon.'
   b. ZAładowałem wagon węglem.
     'I loaded the wagon with coal.'

(23) a. * OBRzadowałem węgiel na wagon.
     * 'I overloaded coal onto the wagon.'
   b. OBRzadowałem wagon węglem.
     'I overloaded the wagon with coal.'

(24) a. Władawałem walizki do samochodu.
     'I loaded the suitcases into the car.'
     (I loaded the car with the suitcases.)

(25) a. ZAsiała żyto na polu.
     'She sowed rye in the field.'
   b. ZAsiała pole żytem.
     (She sowed the field with rye.)

(26) a. Wsiała ziarno w ziemię.
     'She sowed the seed into the ground.'
   b. * Wsiała ziemię ziarnem.
     (She sowed the ground with seed.)

(27) a. * OBSiała pszenicę na polu.
     (She sowed wheat in the field.)
   b. OBSiała pole pszenicą.
     (She sowed the field with wheat.)
It appears that when the aspectual prefix singles out one of the objects over the other as special, alternation is blocked; but when either object is compatible with the identification of the prefix induced distinguished point, alternate realisations are possible. Concretely, in (23) only the wagon will determine the overfilling mandated by the prefix "OB"; in (24) only the suitcases can be contained, as required by "W"; "ZA" however is satisfied by either the wagon or the coal reaching its intended or proper configuration (cf. (22)).

Significantly, something along these lines also seems to hold in English. When the structure of the event is such that both objects can be viewed as being affected uniformly in parallel fashion, the verb is an alternator. Where no symmetry can be imposed a failure to alternate can be detected. Let us consider Pinker's 'narrow
conflation classes' for the locative in this light.  

'content-oriented locatives'

1. (alternating) 'smear', 'brush', 'slather', 'rub', etc.  
Simultaneous forceful contact and motion of a mass against a surface: 'He smeared mud on the wall', 'He smeared the wall with mud.'

Here a substance/mass is being given a spatial extent, guided the spatial extent (hence obligatorily a surface) of another object. In the specific example, we perceive an episode of 'creating' a new wall (or fragment thereof) of mud. In the process BOTH experience the forceful contact. This matching effect provides the requisite symmetry. The individual verbs specify particular manners or instruments of carrying this matching out.

2. (alternating) 'heap', 'pile', and 'stack'.  
Vertical arrangement on a horizontal surface: 'He heaped bricks on the stool', 'He heaped the stool with bricks.'

Both stool and bricks participate in supporting subsequent bricks, giving the requisite symmetry. For subsequent bricks, the stool-plus-earlier-bricks virtually constitute a new kind of stool.

3. (alternating) 'splash', 'spray', 'squirt', 'splatter', etc.  
Force is imparted to a mass, causing ballistic motion in a specified spatial distribution along a trajectory: 'She splashed water on the dog', 'She splashed the dog with water'.

Both dog and water (in general, target and mass) feel the impact of a sudden force. Here the symmetry is particularly clear.

27. The examples and characterisations below are basically quoted verbatim from Pinker, whose role in systematising the data here must be viewed as an important contribution to the enterprise. His work in turn builds on that of Rappaport and Levin (1986).

28. This sentence is marginal at best. The fact that the bricks (but not the stool) will end up in disarray once the heaping is done probably induces substantial asymmetry here.
4. (alternating) 'bestrew', 'scatter', 'sow' and 'strew'.
Mass is caused to move in a widespread or nondirected distribution: 'The farmer scattered seeds onto the field', 'The farmer scattered the field with seeds.'

Both seeds and field are or become widespread. As in class 1, the matching of extension in space is at stake; it is as if we are creating a new field/subfield with our seeds (a sown field this time).

5. (non-alternating) 'pour', 'ladle', 'spill', 'slosh', 'dump', etc.
A mass is enabled to move via the force of gravity: 'She dribbled paint onto the floor', *'She dribbled the floor with paint'.

Gravity affects only one of the arguments here (the paint and not the floor), resulting in a crucial asymmetry. This leads to non-alternation.

6. (non-alternating) 'coil', 'spin', 'twist', 'wind', etc.
Flexible object extended in one dimension is put around another object (preposition is 'around'): 'He coiled the chain around the pole', *'He coiled the pole with the chain'.

The preposition 'around' emphasises the crucial asymmetry, with one object (the chain) being made to contain the other (the pole).

7. (non-alternating) 'emit', 'excrete', 'expel', 'spew', etc.
Mass is expelled from inside an entity: 'He spat tobacco juice onto the table', *'He spat the table with tobacco juice'.

Clearly only one of the objects is being expelled here (the juice and not the table). This means that from the point of view of lexico-conceptual structure these verbs impose a definite asymmetry on any actual or would-be arguments.

8. (non-alternating) 'glue', 'nail', 'pin', 'staple', 'tape', etc.
These are verbs of attachment. As Pinker points out they implicate an intermediary instrument or substance, and I suspect it is this intermediary that imposes the relevant asymmetry.)

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29. Pinker notes that the latter is marginal for some speakers. The lack of necessary simultaneous forceful contact means that there is actually less by way of symmetry here than in class 1.
'container-oriented verbs'

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1'.
(alternating) 'pack', 'cram', 'jam', 'stuff', etc.
A mass is forced into a container against the limits of its capacity: 'They packed oakum into the crack', 'They packed the crack with oakum.'

The containment situation would (in isolation) be enough to impose an asymmetry on the objects here, but we have an additional component of meaning - an element of forcing. Both objects experience the pressure of this forcing, supplying enough symmetry for alternation.

2'.
(alternating) 'load', 'pack' (suitcase), 'stock' (shelves). A mass of a size, shape, or type defined by the intended use of a container (and not purely by its geometry) is put into the container, enabling it to accomplish its function: 'Max loaded the gun with bullets', 'Max loaded bullets into the gun.'

Once again, prima facie, we have containment and so asymmetry. However for this tiny class of verbs, the notion of containment is secondary to that of readying something for its standard function. In the cited example, BOTH bullets and gun enter into a configuration in which they can have optimal effect. It is this symmetry that allows the alternation.

3'.
(non-alternating) 'coat', 'cover', 'encrust', 'shroud', 'tile' etc. Also 'lire' and 'edge' and 'fill'. (Pinker's characterisation covers only some of these cases: a layer completely covers a surface.)

I suspect that the patently denominal character of virtually all these verbs (de-adjectival character for 'fill') imposes the requisite asymmetry. Only one of the objects can be the coat, cover, crust, etc.

4'.
(non-alternating) 'adorn', 'clutter', 'festoon', 'season', 'stain', etc.
Addition of an object or mass to a location causes an aesthetic or qualitative, often evaluative, change in the location: 'They adorned the gift with ribbons', '*They adorned ribbons onto the gift.'

Here the asymmetry can be seen in the notion of addition, as well as in which argument is qualitatively/evaluatively changed.
5'. (non-alternating) 'soak', 'interleave', 'drench', 'saturate', etc.
A mass is caused to be co-extensive with a solid or layerlike medium: 'She soaked the sponge with water', *'She soaked water into the sponge.'

The notion of one object containing another in neutral fashion is sufficient to impose an asymmetry. Further components of meaning only add to it (e.g. the component of adornment as in class 4').

6'. (non-alternating) 'clog', 'block', 'dam', 'plug', etc.
An object or mass impedes the free movement of, from, or through the object in which it is put: 'I clogged the sink with a cloth', *'I clogged a cloth into the sink.'

Containment once again imposes an asymmetry. Further, as Pinker's description makes clear, the standard functioning of precisely one of the objects is being crucially affected.

7'. (non-alternating) 'stud', 'bombard', 'speckle', 'spot' etc.
A set of objects is distributed over a surface: 'They studded the coat with metal stars', *'They studded metal stars onto the coat.'

The very fact that one of the objects must be a set (while the other standardly is not) implies asymmetry, and thus non-interchangeability.

The parallel between the observations about English and Polish would perhaps be stronger if English had overt prefixes signalling the symmetries/asymmetries noted above. In a sense, English encodes these prefixal notions covertly. Recall that aspectual prefixes introduce distinguished points; English activity/accomplishment verbs simply are points in the lexicon. Hence it is reasonable to say that (at least in some cases) prefix-like information (including the relevant symmetry considerations) are encoded in the relevant English verbs directly, essentially as part of their semantics.

Prefix-like behaviour, i.e. perfective aspect, is no doubt behind
the explanation of the holism effect noted in the literature with respect to these verbs. Thus if I load the wagon with the hay, I must affect the whole wagon, or the whole of that portion designed to be affected. If however I load the hay onto the wagon, I must use up all the hay but the wagon can easily remain half-empty.

Walińska (1989:16) makes the claim that the 'most salient feature of Polish 'load'-verbs is the fact that the argument structure \([V \text{Location-NP-ACC Theme-NP-INSTR}]\) does not occur without the prefix'. Thus a sentence like (*) "Lał go wodą" (*He poured him with water; cf. "OBlat go wodi" which is fine) is ungrammatical. This certainly ties in well with the observations made here. Actually, Walińska's claim is a little too strong in the light of sentences like "Smaruję chleb masłem" (I butter the bread; literally: I smear the bread with butter). I conclude that while locative alternation in Polish is generally prefixally triggered, there are some instances of an English-style alternation as well.

The foregoing two sections can be used to argue for a tight connection between aspect and argument structure. The dative alternation is tied to inherent perfectivity (aspectual zerohood), and the locative alternation to distinguished points. Observations like these can be viewed as support for a version of the Aspectual Interface Hypothesis (AIH) proposed by Tenny (1987, 1988). Tenny's thesis is that aspect provides the interface between argument structure information in the lexicon and overt syntactic realisation (only aspectual information being syntactically accessible). The
results in this chapter extend the domain of applicability of the AIH.

4.3 GEORGIAN

In the following section I wish to examine some of the aspectual properties of Georgian verbs. Given that the aspectual theory I have proposed was motivated (primarily) using data from Slavic, it is important to test it against what can be observed in other language families. In this way, further evidence can be adduced for the claim that an aspectual module of the type envisaged here is a constituent part of Universal Grammar. The aspectual system of Georgian reveals numerous intricacies, some of which seem to follow quite nicely from the representational system here developed. This is why I now turn to Georgian in particular. I should make clear from the start that, not being a speaker of Georgian, I claim no special competence in this language; consequently the present section must be accorded a somewhat tentative status. Nonetheless I feel that the published literature dealing with the Georgian verb is now sufficiently rich to make at least a stab at an analysis like the following worthwhile.

BACKGROUND

In preceding chapters I have had occasion to make reference to Georgian in a number of instances. I noted in particular (in section 1.7) the existence of aspectual prefixes such as those that can be seen below:
This pattern of behaviour is familiar to us from Slavic (Polish in particular). We find a family of perfectives corresponding to many a common simple imperfective verb. We also see the prefixationally induced shift to the future. Finally, in both cases the prefixes are related to prepositional/adverbal notions.

It must be pointed out, however, that although Slavic and Georgian aspectual prefixation have much in common, they are not absolutely identical in all respects. Two such respects will be mentioned.

Firstly, as pointed out explicitly by Vogt (1971:185, my emphasis):

Ce système rappelle le système du russe où à côté du présent imperfectif "pišu" (je l'écris), on a les présents perfectifs-futurs "napišu" (j'écrirai), "zapišu" (je noterai), "perepišu" (je copierai), "vypišu" (je m'abonnerai à qch.), etc., mais avec une différence importante: en russe on peut de ces perfectifs-futurs tirer des présents comme "zapisyvaju", "perepisyvajo", "vypisyvaju", EN GÉORGIE ON NE LE PEUT PAS. En géorgien, la forme "c'er" (tu l'écris), doit servir de présent à tous les composés préverbiaux, la spécification du sens, nette au futur et à l'aoriste grâce au préverbe, se faisant par le contexte. On a ainsi "čemi bavšvebisatvis me sxva sabavšvo žurmals vic'er" (pour mes enfants je suis abonné à un autre journal pour enfants) (N.Nak'ašige), où seul le contexte indique que "vic'er" n'a pas ici le sens de 'je
l'écris pour moi-même', mais 'je le fais venir par écrit', correspondant au futur "gamovio'er", à l'aoriste "gamovio'ere".

(This system reminds one of that of Russian, where corresponding to the imperfective present "pišu" (I am writing) one finds perfective-futuro present forms like "napišu" (I will write), (...) but with one important difference: in Russian one can form presents from these perfective-futures (e.g. "zapisyvaju"...), whereas IN GEORGIAN ONE CANNOT. In Georgian, the form "c'er" (you are writing it) must serve as the present for all the prefixed forms, and the shade of meaning that is clear in the future or the aorist thanks to the prefix is marked only by the context. Thus in "cem bavšebisatvis mē sxva sabavšvo žurnals vic'er" (for the benefit of my children, I subscribed to a child magazine) only the context indicates that "vic'er" does not here mean 'I wrote it for myself' but rather 'I caused it to come via writing', corresponding to the future "gamo-vic'er" and the aorist "gamo-vic'ere").

Recall that in Slavic the relevant difference is encoded by the number of boxes present:

(a) 

(b)

Dopisać  
Dopisywać

Prima facie then, it appears that Georgian is restricted in its ability to add a box to a structure like (a). (In Polish, the suffix licenses the outer box.) We shall however shortly see that suffixationally induced box-inside-box configurations are not totally banned in Georgian, and in fact can be interpreted as playing a crucial role for certain verb classes.

A second difference between Slavic and Georgian concerns the fact that there are some Georgian verbs (mainly verbs of motion) which
remain in the present tense even when a prefix appears. Aronson (1982:93-4) gives examples like the following:

(33) 'come'

Present: mo+-di-s (HE COMES)
mo+-di-an (THEY COME)
Future: mo+va (he will come)
mo+vl-en (they will come)

'go'

Present: mi+di-s (HE GOES)
Future: c'a+va (he will go)

'go away'

Present: ga+di-s
Future: ga+va

'go up'

Present: a+di-s
Future: a+va

etc.

One straightforward interpretation of data of this sort is that the Georgian aspectual prefixes can be primarily adverbial (in a limited set of environments). In this way, the prefixes still have the ability to reflect their historical origin. Vogt (op.cit. p.183), who points out that the phenomenon in question can be traced in manuscripts dating back to (at least) the eleventh century, writes:

Ces préverbes du v[ieu]x g[éorgien] modifiaient le sens du verbe ou précisai ent la direction, mais ils n’avaient aucune influence sur la valeur temporelle des formes verbales. Ainsi le présent muni d’un préverbe, reste un présent ... et l’imparfait reste un imparfait ...

(These Old Georgian prefixes modified the sense of the verb or made precise its direction, without having any influence on the temporal value [= tense] of these verbal forms. Thus a present equipped with a prefix remained a present, ... and an imperfect remained an imperfect ...)

Tying in with this phenomenon is the possibility (in Old Georgian only) of separating the verb from its prefix by other lexical material. The historical transition might be viewed as follows: At a
certain stage of Old Georgian the prefix not only added a point to a simple box, but induced the appearance of an additional outer box (cf. (b) above) as well. This had the advantage of preserving the aspectual value of the original box (and consequently of the paradigm to which the verb corresponding to this box belonged), but it did so at the cost of employing two operations rather than one. In Modern Georgian, this system was by and large reanalysed, resembling in effect that of Polish. However, certain lexical pockets of resistance remain to this day. For what it is worth, I speculate that the continuing presence of structures like (b) in Modern Georgian (accounting for the primarily adverbial force of "mo" in forms like "modis, modian") is what is blocking the use of structure (b) in a "DOpisywać"-type development, as mentioned in the previous paragraph.30

The retention of adverbial force can be seen in those verbs with a "mo"/"mi" opposition, the former pertaining to 'here', the latter to 'there':31

(34) mo-m-marta (il s'adresa à moi)
    mo-g-marta (il s'adresa à toi)
    mo-g-marte (je m'adressai à toi)
    mo-m-marte (tu t'adresses à moi)

30. I suspect that structure (b) may likewise be responsible for prefixations of the Latin/Romance type (confer, defer, refer, etc.) which do not alter aspectual properties.

mi-v-marte  (je m'adressai à lui)
mi-marte   (tu t'adressas à lui)
mi-marta   (il s'adressa à lui)

Not all verbs allow this pattern. In those that do however, we see a
kind of indirect object agreement phenomenon, with "mo" for first and
second person, and "mi" for third. This further sheds light on the
fact that many prefixes come in two variants:32

\[
\begin{array}{ll}
\text{a-} & \text{amo-} \\
\text{ga-} & \text{gamo-} \\
\text{še-} & \text{šemo-} \\
\text{ča-} & \text{čamo-} \\
\text{c'a-} & \text{c'amo-} \\
gada- & \text{gadao-}
\end{array}
\]

Initially one might suspect a flagrant violation of the bar against
multi-prefixation established for Polish in chapter 1. In view of the
above, however, we can see that the final syllable ("mo") is not so
much a second aspectual prefix as an adverbial specification of how
the true prefix (the outermost one) is to be interpreted. Invariably,
it seems, we find that the longer prefixal variants are interpreted as
the meaning of the prefix itself plus the notion 'here':33

\[
\begin{array}{l}
\text{ga-vida da šemo-vida} \\
\quad 'il est sorti et rentré (ici)'
\end{array}
\]

32. In a sense, the prefixes in the lefthand column in (35) can be
viewed as having an implicit second "mi" (thither) component. Note
that in English a preposition like 'under' can mean 'to + under'; the
reverse direction however is explicitly bimorphemic: 'from under'.

33. Data from Vogt (op.cit. p.175).
In fact both components of the long form prefixes can function adverbially with (some) verbs of motion:\textsuperscript{34}

(37) Presents: 'come up' a-mo+di-s
     'come out' ga-mo+di-s

As a final observation; I will add that sometimes "mo" ('here') and "mi" ('there') can be combined, yielding a 'here and there' sense:\textsuperscript{35}

(38) mimo-vxede (j'ai regardé dans toutes les directions)
mimo-akvs (il le porte avec lui çà et là)

Significantly, however, for our purposes, Vogt (loc.cit.) notes:

Aujourd'hui on préfère la juxtaposition de deux formes verbales, quelquefois avec abréviation de la première;
p.ex. "mi-vxed - mo-vxede",
    "mi-at'ar - mo-at'ara" (il l'a porté çà et là), ...

(Today justaposition of two verbs is preferred; the first is sometimes abbreviated, 
e.g. "mi-vxed - mo-vxede"
    "mi-at'ar - mo-at'ara" ... )

Clearly, as the adverbial uses of the prefixes become more and more lexically specialised in the course of historical development, the bar against multi-prefixation can be seen to be asserting itself more and more

\textsuperscript{34} Aronson (loc.cit.).

\textsuperscript{35} I have only ever encountered the order "mimo"; data from Vogt (op.cit. p.174).
more strongly.

I will henceforth abstract away from these adverbial complications, about which I have nothing to add, focusing instead on the parallels between perfectivisation in Slavic and perfectivisation in Georgian. Perfectivisation via prefixes has already been mentioned. What is interesting is that both Polish and Georgian also exhibit perfectives without aspectual prefixes - i.e. inherent perfectives. Examples like the following were given in section 2.2:

(39) itxov (tu le demanderas)
    ik'itxav (tu poseras une question)
    ip'ov(n)i (tu le trouveras)
    iq'idi (tu l'achèteras)

In Polish, the core set of inherent perfectives (which the reader will recall have aspectual zero status in the lexicon) come in pairs of the "rzucić" / "rzucać" type. "Rzucić" receives structure (c), while "rzucać" (bearing a suffix licensing box-inside-box) corresponds to (d):

\[
\text{(c)} \\
\begin{array}{c}
\bullet \\
rzucić
\end{array}
\quad \text{(d)} \\
\begin{array}{c}
\text{box-inside-box}
\end{array}
\]

\begin{array}{c}
rzucać
\end{array}

This pairing phenomenon is also found in Georgian. Thus corresponding to (39) we find (40):\footnote{36}

\footnote{36. Data from Vogt (op.cit. p. 142).}
Note the presence of suffixal material ("-ulob") which is necessary to induce the emergence of structure (d). We will see later on that it appears to be the "-ob" that is doing the real work here. Holisky (1981a:138) points out explicitly that the forms in (39) have 'punctual aspect' (perfective in our terms), contrasting with the 'linear aspect' (imperfectivity) of (40). The parallel with "rzucio"/"rzucac" is striking.

One other phenomenon associated with aspectual prefixes must be mentioned for future reference. I refer here to what are sometimes called 'derived inceptives' or "doni" forms - the latter term derived from the Georgian name for the letter 'd' that characterises these forms. 37 The following examples are from Holisky (1980:15438):

(41) mepe (king)
    ga-mep-d-eba (become a king)

    biurok'rat'i (bureaucrat)
    ga-biurok'rat'-d-eba (become a bureaucrat)

    c'itel'i (red)
    ga-c'itl-d-eba (become red, blush)

37. There are unrelated uses of a "d" morpheme in other sections of the Georgian verbal paradigm, for instance in the so-called Imperfect.

38. Owing to pagination errors, page 154 actually bears the page number 153.
The overall pattern for inceptive formation is Prefix + Root + d + ending. Significantly both the prefix and the "d" morpheme are in general necessary, forms like *"mepdeba" being rejected by Holisky's informants. In our terms, the prefix introduces a distinguished point, and the "d" marks this point as a point of inception. Recall that temporal ordering information cannot be specified in our aspectual structures (for principled reasons). Hence the appearance of other morphemes (tense morphology; the Georgian "d") which perform this task.

**CLASS 3 or MEDIAL VERBS**

At this stage of our investigation we are ready to turn to an interesting set of Georgian verbs – variously called Class 3 verbs or medial verbs in the recent literature. To understand what a Georgian verb class is, one needs to note that Georgian has (on the surface)

---

39. There are some exceptions however, presumably due to lexical reanalysis. This can be demonstrated by (for example) the presence of the "d" in sections of the verbal paradigm where it 'should not' appear – indicating incorporation into the verbal root. Direct lexical storage must also be held responsible for a small set of prefix+root+d+ending forms where the root cannot function as an independent morpheme.

40. Curiously, Holisky (1981b:42 fn.1) writes of these inceptives that 'the question of whether these forms correspond more closely to an English present or future is an open one, in need of further research'. For our purposes, the future interpretation would appear more natural, but (given our box-inside-box technology, especially with respect to forced readings) a different constellation of facts would not present an insurmountable obstacle.
three Case realisation schemata (cf. Harris (1981)):

<table>
<thead>
<tr>
<th></th>
<th>subject</th>
<th>direct object</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Ergative</td>
<td>Nominative</td>
</tr>
<tr>
<td>B</td>
<td>Nominative</td>
<td>Dative</td>
</tr>
<tr>
<td>C</td>
<td>Dative</td>
<td>Nominative</td>
</tr>
</tbody>
</table>

We then find (descriptively) the following class-series array:

<table>
<thead>
<tr>
<th>series I</th>
<th>series II</th>
<th>series III</th>
</tr>
</thead>
<tbody>
<tr>
<td>(pres./fut.)</td>
<td>(aorist)</td>
<td>(perfect)</td>
</tr>
<tr>
<td>class 1</td>
<td>B</td>
<td>A</td>
</tr>
<tr>
<td>class 2</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>class 3</td>
<td>B</td>
<td>A</td>
</tr>
<tr>
<td>class 4</td>
<td>C</td>
<td>C</td>
</tr>
</tbody>
</table>

Series I contains the Present and Future subseries of 'tenses';
series II the Aorist, and series III the so-called Perfect. Class 1 verbs are typically transitive; class 2 are unaccusative* and class 4 are called 'indirect' and are said to trigger 'inversion'. We will focus primarily on Class 3 - most of the members of which (though not all) are unergative. In the following sentences, note the "-m" marking Ergative Case, and the Dative Case signalled by "-s":

(42) a. (Present) gogo t'iris.  
girl.NOM 'The girl is crying.'

41. Or 'screeves', to use the term favoured by some Kartvelologists.

42. This is a technical term in the framework of Relational Grammar; it is not to be confused with subject-aux inversion.

43. Data from Holisky (1981b:13).
b. (Aorist) gogo-m it'ira.  
girl.ERG  
'The girl cried.'

c. (Perfect) gogo-s ar ut'iria.  
girl.DAT not  
'The girl didn't cry.'

I will concentrate on certain aspectually linked properties of the verbs of Class 3. Holisky (1981b) identifies two broad types: those that are derived from other lexical items, and those that are stored as such in the lexicon themselves. Their properties contrast in interesting ways. The first type has three subtypes, illustrated below:

(43) CELKOB- VERBS

<table>
<thead>
<tr>
<th>Verb</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>celk-i</td>
<td>naughty, unruly (usually of children)</td>
</tr>
<tr>
<td>celk-obs</td>
<td>behave in a naughty / unruly manner  (usually of children)</td>
</tr>
<tr>
<td>pilosopos-i</td>
<td>philosopher</td>
</tr>
<tr>
<td>pilosopos-obs</td>
<td>philosophise</td>
</tr>
<tr>
<td>bavsv-i</td>
<td>child</td>
</tr>
<tr>
<td>bavsv-obs</td>
<td>behave like a child</td>
</tr>
<tr>
<td>dalak-i</td>
<td>barber</td>
</tr>
<tr>
<td>dalak-obs</td>
<td>work as a barber</td>
</tr>
<tr>
<td>art'ist'-i</td>
<td>actor</td>
</tr>
<tr>
<td>art'ist'-obs</td>
<td>put on airs like an actor; work as an actor</td>
</tr>
</tbody>
</table>

(44) SADILOB- VERBS

<table>
<thead>
<tr>
<th>Verb</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>sadil-i</td>
<td>noon meal</td>
</tr>
<tr>
<td>sadil-obs</td>
<td>eat the noon meal</td>
</tr>
<tr>
<td>ukm-e</td>
<td>day off, holiday</td>
</tr>
<tr>
<td>ukm-obs</td>
<td>celebrate a holiday</td>
</tr>
<tr>
<td>bunt'-i</td>
<td>riot, mutiny, rebellion</td>
</tr>
<tr>
<td>bunt'-obs</td>
<td>riot, mutiny, rebel</td>
</tr>
</tbody>
</table>
Note firstly the suffix "-ob", which provides us with a clue to the requisite aspecual representation: box-inside-box. Thus "celkob" and "sadilob" type verbs are represented as follows:44

Semantically this seems eminently reasonable. Consider "art'ist'obs" or "bavšvobs". The overall meaning of behaving like an actor or behaving like a child (respectively) involves two predications, one subordinated to the other: Firstly, we have 'being an actor / child', and secondly we have 'behaviour in accordance with a set of

44. This contrasts with Polish, where "filozofować" (to philosophise) is just a single box, this being the general pattern with "-łować" verbs. Recall that Polish "-łować" is a very productive predicate forming suffix, yielding even such forms as "startować" (to start), "stopować" (to stop), etc. The lack of special semantics for these cases contrasts with the Georgian examples under consideration.
expectations'. The former (corresponding to the inner box) embedded under the latter (the outer box) gives the requisite meaning. In like manner, "sadilobs", "mc'q robberbs", etc. can all be interpreted as 'doing the conventional thing with respect to x', where again 'being x' is the inner box, around which a set of expectations is added.

This process is quite productive. Holisky (1981b:44ff.) points out the existence of "mark[s]ist'obs" from "marksist'i" (Marxist), and "biurok'rat'obs" from "biurok'rat'i" (bureaucrat). The relevant glosses, as expected, are 'act like a Marxist' and 'act like a bureaucrat'. Likewise, according to Holisky, were one to coin a new Georgian noun "teknok'rat'i", the corresponding medial verb "teknok'rat'obs" would soon be available. Accordingly, I suggest that the relevant verbs are aspectually zero in the lexicon, with the derivational emergence of structure (e) accounting for the systematicity here.

Further justification for the suggested representation of "celkobs" and "sadilobs" can straightforwardly be adduced from the rich array of data available in Holisky (1981b). In this respect it is important to note that Holisky defines the 'medial verbs' via a morphological criterion -- they are verbs which form the Future Subseries from the

45. The order of derivation (i.e. "celki" -> "celkobs", etc.) is justified by truncation and syncope phenomena.
47. "Tu te comportes en marxiste" is Vogt's (loc.cit.) gloss for "marksist'ob".
Present by means of 'the circumfix "i-...-eb"'. This provides the (imperfective) presents listed in (43)-(45) with imperfective futures, a possibility available (by definition) only to medial verbs. The natural question that now arises is whether perfective futures are also available. Essentially, we are asking here about prefixation possibilities. Significantly, "celkob" verbs never occur with aspectual prefixes. This follows directly from the structure of representation (e) - the logic being identical to that used to rule out prefixed perfective counterparts to "rzucac" or "czytywac" in Polish (see section 2.4).

The same holds for the "sadilob" class, but with five exceptions: 48

(46) c'a=i-sauzm-eb3 (he will eat a little breakfast)
c'a=keip-eb3 (he will party a little)
c'ak'amat-eb3 (he will enter a debate)
c'a=saubr-eb3 (he will converse a little)
ga=i-xumr-eb3 (he will tell one joke)

This small set will of course have to be stored in the lexicon. Aspectually, I propose the following representation:

(f)

Significantly, the prefix here has a quantificational interpretation (telling us that the series associated with the reduplication is

Technically, what emerges here is not (e) but two boxes side by side. Compatibility with minimal effort is assured as the outer box will be needed after prefixation anyway. And of course the reduplication is consistent with this particular interpretation of this particular prefix. Apart from (46), "sadilob" verbs take on structure (e), which bars free prefixation, as required.

The "goraob" class is slightly different, since these medial verbs are deverbal. In general, prefixes are barred, but on the surface it looks as if one prefix, "da", is permitted.49

\[(47)\]
\[
\begin{align*}
  da=k'ink'ilaobs & \quad (\text{hop on one leg many times}) \\
  da=curaobs & \quad (\text{swim around}) \\
  da+\check{e}'enaobs & \quad (\text{run around all day in vain})
\end{align*}
\]

Here again I suggest that reduplication is at work. In fact, I suspect that a form like "dacuraobs" is to be derived aspectually directly from "curavs" rather than from "curaobs": We start with a single box (representing "curavs"); the prefix/distinguished point will trigger reduplication; finally, "-ob" will license an outer box.

The foregoing logic is predicated on the assumption that "da" (like distributive "PO" in Polish) has multiplicative power. This indeed seems to be the case — witness the following passage from Vogt (op. cit. p.175):

Une autre fonction remarquable du préverbe ["da"] est celle de remplacer le préverbe normal avec le sens d'une action intensifiée: "p'uri ga-vô'eri" (j'ai coupé le pain (en deux)),

mais "da-vč'eri" (je l'ai coupé en plusieurs morceaux). De cette fonction dérive celle d'indiquer le pluriel du régime direct: "picari ga-tale" (tu as taillé la planche), vs. "picrebi da-tale" (tu as taillé les planches), "še-mose" (tu l'as habillé), vs. "da-mose" (tu les as habillés),

"mgelma cxvari še-č'ama" (le loup a mangé le mouton), vs. "cxvrebi da-č'ama" (il a mangé les moutons), ...

(Another remarkable function of the prefix "da" is that of replacing the normal prefix and adding the sense of intensified action: "p'uri ga-vč'eri" (I cut the bread (in two)), vs. "da-vč'eri" (I cut it into many pieces). This function leads to one of marking the plurality of the direct object ... )

Our hypothesis is thus nicely confirmed.

It is important to contrast the behaviour of this type of medial verb (i.e. (43)-(45) = "celkob"/"sadilob"/"goraob" classes) with that of the type which is not derived, but stored as such in the lexicon. Apart from the eight cases discussed, the former disallow aspectual prefixes. The latter type on the other hand typically allow them.

What I am referring to here as 'the latter type' actually comprises a number of classes, two of which are illustrated below:

(48) SISINEB- VERBS

sisin-ebs hiss (of snakes): whistle (of the wind)
laklak-ebs blabber, chatter
gruxun-ebs thunder
bzu-is buzz
qiv-is screech

(49) GORAV- VERBS

gor-avs roll (intransitive)
cur-avs swim, float, slip on ice
seirn-obs stroll, walk
xox-avs crawl
cuncul-ebs trip along
Since the verbs like those in (48)-(49) are not derived from other lexical items, they are stored as basic lexical entries, and therefore receive the aspectual representation common to the vast majority of simple Georgian (and Polish) verbs: one box. This is consistent with their semantics. Note that this means that "qivis" is like Polish "wrzeszczoć" ('to scream', an imperfective) rather than like "wrzasnąć" ('to scream', a denominal perfective). As for "goravs" and "curavs", we have already encountered these verbs, which can serve as the input to "goraob" formation. It is eminently natural then for "goravs" to contrast with "goraobs" in terms of number of boxes - one versus two. (Only a (zero or) one box representation can serve as an input for the derivation of a box-inside-box structure.) Note that while the suffix "-ob" occurs with all the verbs in (43)-(45), its appearance is sporadic (and by and large absent) with verbs belonging to the classes illustrated in (48)-(49).

Having motivated single box representations for the "sisineb" and "gorav" classes, we essentially predict that they should be able to co-occur with aspectual prefixes, and indeed they do: 50

(50) buzma uceb da=ibzulva.
    'The fly suddenly buzzed.'

(51) da=igruxunebs tu ara, gamomeyvijeba.
    'Just at the moment when the thunder claps,
     I will wake up.'

Crucially the "i-...-eb" future is imperfective, while the prefixed future in (51) is perfective (typically semelfactive). This behaviour is what we expect from our knowledge of aspectual prefixes in general.

Some "gorav" verbs also exhibit prefixed punctual futures in addition to the "i-...-eb" imperfective future forms:51

(52) djes sayamos šentan šem=visoirneb. 'Tonight (while I'm out for a walk,) I'll stop in on you.'

This is as predicted.

Derived inceptive formation provides us with another very sharp contrast between (43)-(45) and (48)-(49). "Celkob", "sadilob", and "goravob" verbs simply do not allow inceptive formation; "sisineb" and "gorav" verbs do:52

(53) a+qiv-l-deba (begin to screech)
    a+bzu-il-deba (begin to buzz)
    mi-gor-deba (roll up)
    še-cuncul-deba (trip in)

Recall that inceptive derivation ("doni") generally depends on interpreting a distinguished point (introduced by a prefix) as a point of inception. Thus our theory predicts that the "sisineb" and "gorav" classes, which allow prefixes, will also have derived inceptive

counterparts, while those classes that cannot co-occur with prefixes (or can do so only via very special derivations) will not be able to undergo inceptivisation. Interestingly, "sisineb" verbs always take the prefix "a" for inceptive formation, while verbs of the "gorav" type (being verbs that indicate motion) occur with a variety of prefixes in these circumstances.

To summarise, medial or Class 3 verbs in Georgian fall into two broad types: basic and derived, corresponding to (48)-(49) and (43)-(45) respectively. The former allow prefixes and inceptives; the latter disfavour prefixes, disallow inceptives, contain the suffix "-ob" attached to some other lexical item, and have rather special semantics. This clustering of properties follows directly from the contrast between a single box representation versus a box-inside-box structure (like that shown in (e)). To the extent that an aspectual theory designed for Slavic is able to neatly capture the behavioural contrasts among classes of Georgian verbs, I conclude that we have significant evidence that can be used to argue in its favour.

4.4 RE RE

Over the past several years, a number of articles have been written dealing the English prefix 're-'. Several curious restrictions on

its distribution have emerged. In this final section I will examine them and propose an explanation based on the aspactual theory I have developed.

I begin with some preliminary remarks. Standard examples of the use of 're-' in English include such verbs as 'rewrite', 'reread', 'retypen', 'readvertise', 'reuse', and 'reconstruct'. The process of adding 're-' appears to be productive: It takes a verb as its input, yielding semantics along the lines of 'do that verb again'. Wechsler (1988) cites examples such as 'renazify West Germany' and 'reFTP a file' in support of the productivity of this procedure. Note that despite its Latin provenance, English 're-' is clearly not restricted to Latinate verbal roots. I should point out that I will not be considering the prefix where it functions as a bound morpheme (e.g. 'return', 'resurrect', 'receive', 'release'). Further I will in general put to one side semantic outputs different to that described above (e.g. the notion 'back' which appears in 'repay a loan' or 're-enter the atmosphere').

This said, consider the following sentences:

(54)  
   a. I ran the last mile.
   b. I ran to the store.
   c. I ran (in the park).

(55)  
   a. You reran the last mile.
   b. *You reran to the store.
   c. *You reran (in the park).

54. Here there need not be more than one entry.
It has been noted in the literature that 're-' is restricted to accomplishments, thus rendering (55c) and (57c) deviant. However, not just any accomplishment will do, as the contrasts between the (a) and (b) sentences show. It is not difficult to make sense of (54-57) in terms of the theory I have presented, given that we are dealing with three different derivations of final aspectual structures (one for the (a) sentences, one for (b), and one for (c)). I will focus on (54) and (55). The English verb 'run' is represented lexically as a single point. (54a) and (54b) end up with point-inside-box structures; in the former the direct object helps to license the distinguished point, while in the latter it is licensed via merger. (54c) has a final structure with a double (reduplicated) point.

Evidently the relevant generalisation about attaching 're-' to (54) can be stated as follows:

(58) 're-' (in the sense of 'do V again') requires an intermediate stage in the derivation consisting solely of a distinguished point.

In (54c) the lexically present point is at no stage distinguished; that is why it has to be reduplicated. As a result, (53) is not satisfied and (55c) is deviant. In (54b) the lexically present point only becomes distinguished after merger with the aspectual
representation of the prepositional phrase. This is sufficient to
block reduplication, but insufficient to satisfy (58), accounting for
the judgment on (55b). (55a) satisfies (58) and so is acceptable.

The generalisation in (58) is eminently reasonable from a semantic
point of view. Consider, for instance, what rewriting an essay
entails: There are two (relevant) events of writing, each of which
reaches a culmination. When the writing process reaches the (end of
the) last sentence of the essay a second time, we can say that an
event of rewriting has occurred. The crucial identity condition is
two culminations of the same sort. What leads up to the culminations
(e.g. the writing of individual words and letters) need not be
exactly duplicated (in fact standardly it won't be, given that the
goal of rewriting is often to produce a better product). The writing
and the rewriting (each a point inside a box) need not be identical;
the culminations (the fact that an essay is completed on both
occasions) must be. The easiest identity condition to check is total
identity (since here no questions of which factors to abstract away
from arise). With respect to 're-', total identity must be satisfied
at the level of just the distinguished point. Hence (58).

This account predicts that 're-' cannot be prefixed to stative
verbs. The latter are aspectually simple boxes, and so cannot satisfy
(58). Representative data follow:

55. Recall from chapter 3 that this representation is
point-inside-box. There being only one point, it must count as
distinguished.
(59)  
  a.  I knew the answer.
  b.  * I reknew the answer.

(60)  
  a.  You loved you country.
  b.  * You reloved your country.

My approach also leads us to expect that English verbs lexically stored as point-inside-box (typical achievement predicates) will not admit 're-'. Correspondingly we do not find (*') 'redie', (*) 'respot', or (?)'rewin the race'. 'Re-enter' does exist, but as already mentioned if a satellite re-enters the atmosphere it need NOT have entered it before. (It need merely come BACK to its planet of origin.) 'Recapture' works the same way.56

Given the foregoing, sense can be made of a number of curious restrictions on 're-' discussed in Roeper and Keyser (1990).

Following Carlson and Roeper (1980), the authors note that the double object construction with 're-' is degraded:

(61)  
  a.  He gave the man the money (again).
  b.  * He regave the man the money.

(62)  
  a.  She threw him the ball (again).
  b.  * She rethrew him the ball.

(63)  
  a.  We showed you the paintings (again).

---

56. Thus I can put out an order to recapture a escapee lion that was born in captivity and so is unable to fend for itself in the wild. It need never have been captured before.
b. * We reshowed you the paintings.

(64) a. They bought us a new car.
    b. * They rebought us a new car.

Apparently it is not the presence of the double object construction per se that triggers the violations in (61)-(64), but rather the choice of verbs:

(65) a. * We reshowed the paintings.
    b. We re-exhibited the paintings.

(66) a. * They rebought the vehicle.
    b. They repurchased the vehicle.

From our point of view, such an array of data is basically to be expected. Double object verbs like 'give', 'throw', 'show', and 'buy' are aspectual zeros in the lexicon. They end up with point-in-box final structures, but by emergence via mutual licensing. At no stage do we see a solitary distinguished point, and so at no stage is satisfied. Data of the type exemplified above are thus predicted.

Roeper and Keyser's account of (61)-(66) relies on a syntactic Abstract Clitic position. Only one such position is claimed to be available per clause, and it may be occupied by a dative clitic or by 're-', but not both. Crucially, in order to implement this account some rather non-standard syntactic assumptions are made (e.g. that

57. Roeper and Keyser (1990: footnote 4) note that these judgments can be delicate; what matters are the contrasts. They report 'striking consistency' across speakers of English.
clitic positions can be occupied by maximal projections at certain levels of representation). To the extent that the theory proposed here avoids such assumptions, one finds it enlightening.

Roeper and Keyser deal with a couple other restrictions on the prefix 're-'. It has long been noted in the literature that 're-' does not co-occur with particles:

(67)  

a. I put it down (again).

b. * I reput it down.

(68)  

a. They wrote it up (again).

b. * They rewrote it up.

(69)  

a. We knocked the robber out (again).

b. * We reknocked out the robber.

I suggest that the data in (67)-(69) be assimilated to data like (70), parallel cases being discussed in Wechsler (1988):

(70)  

a. She put the book in the cupboard (again).

b. * She reput the book in the cupboard.

Recall that (70) acquires its aspectual representation via merger, no solitary DISTINGUISHED point appearing at any stage. If particles in English behave in the same way, triggering merger (see Jackendoff (1977, 1983) for parallels between PPs and particles), then the same logic applies and we expect the data in (67)-(69).

Further evidence for the abstract clitic hypothesis is adduced by Roeper and Keyser from a certain incompatibility between datives and
particles. I will keep away from data of this sort as the relevant
grammaticality judgments are very hazy.\textsuperscript{58} Roeper and Keyser grant
that counterexamples to dative–particle incompatibility appear in the
literature, and they are discussed in Carlson and Roeper (1980) as
well. I suggest that this evidence cannot (at present) bear very much
theoretical weight.\textsuperscript{59}

Finally, a remark on Roeper and Keyser's observation to the effect
that one can play chess but not (*) replay chess. Playing chess is an
activity; aspectually then the relevant point is reduplicated rather
than distinguished (failing to satisfy (58)). Contrast this with
replaying a game of chess (an accomplishment), where the direct object
is sufficient to render the lexically present point distinguished.

Roeper and Keyser (1990) call for a syntactic solution to the
question of the distribution of 're-'. Levin and Rapoport (1988) call
for a semantic solution. The account proposed here is a neat
compromise, relying as it does on the syntax of the aspectual module.
Doing so, it takes up the central observation of Carlson and Roeper
(1980), viz. that of the special relation of a verb to its direct

\textsuperscript{58} Oehrle (1976:225) writes that 'judgments are notoriously weak in
this area'.

\textsuperscript{59} Roeper and Keyser further note that there are some exceptions to
double object–'re-' incompatibility (e.g. 'reoffer someone a loan').
This is not lethal to my theory. One possibility is to posit for a
few verbs like 'offer' two lexical aspectual representations (here,
zero and a point). Alternatively, one could argue with Roeper and
Keyser that the relevant verbs have been reanalysed. Cf. the bound
morpheme use of 're-' in 'return', 'release', etc.
object.

To summarise this chapter, what I have investigated is the applicability of the most central theoretical (aspectual) notions proposed (i.e. aspectual zerohood, box-layering, distinguished points) outside of the domain of Slavic aspect, the domain in which these concepts were originally formulated. To the extent that this has been successful, we find completely independent motivation for our theory.
CONCLUDING THOUGHTS

The theory of aspect that I have proposed is one that takes lexical structures as inputs and converts these into final structures. It thus has a derivational character. Derivational theories of both syntax and phonology have been under active investigation for some time now, not without some measure of success. I find it interesting that some of the properties of a syntactic theory like that developed in Chomsky (1989) find their analogues in my proposed theory of aspect. Vital use is made in the latter of economy, and of the fact that every element in a representation must be licensed (a version of Full Interpretation).

The proposed aspectual theory has the property that given the lexical representation of a predicate and given the desired final structure, our machinery will tell us which operations must be invoked. The operations are thus universal, and in principle freely ordered. This has important acquisitional implications. I suspect that it is worth investigating to what extent phonological theory can also satisfy these boundary conditions (especially now with the appearance of highly structured tree-geometric final (phonetic)
representations - see Clements (1985), Sagey (1986), and much recent work). Aspectual operations are usually accompanied by licensing morphology; otherwise they apply as a kind of last resort, often producing forced (or special) readings.

The system also allows for language variation. The locus of this variation is the lexicon, which permits different ways of underspecifying final structures. Thus English 'build' is lexically a point, while its Polish counterpart is lexically a box. The use of language-particular underlying inventories is familiar from phonology, as of course is the concept of underspecification.

Overall then the theory advocated here seems to mesh quite nicely with many recent ideas about how the overall organisation of the human language faculty is to be viewed.
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